

ALPHA Firmware Update Seminar

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Version 6.1 Rev 3
10-March-2002**

Revision History / Change List for Alpha Firmware Update Seminar.

With every change to the document the title page will be modified to reflect current version and date. Page numbers listed on a specific revision may not be accurate on later versions of the document.

03-Mar-1999 - Version 5.3 Rev 1

28-Feb-1999 the printed doc and the 03-Mar-1999 electronic document are the same.

06-Mar-1999 - Version 5.3 Rev 2

Added V4.4 (vax7000_s0f) firmware version to VAX 7000 model 800 (page 10)

12-Mar-1999 - Version 5.3 Rev3

Added Revision History to document

Defined -p, -s and -d switches. Removed -v switch. Changed set mode command on 7a. (page 93)

Added load -f iso9660 command (pages 94, 234 and 237)

Corrected SPDT address (page 211)

Bolded EXAMINE 80DA32F8+80 command (page 215)

Correct spelling of KZPSA_EDIT and reworded page (240)

Removed space from DANGER::ES_DS_ALPHASERVER line (page 329)

21-Mar-1999 - Version 5.3 Rev 4

Added addition Blitz info (page 323)

26-Mar-1999 - Version 5.3 Rev 5

Changed V5.3 SRM console rev on AlphaServer 8x00 (page 7)

Modified jumper tables (page 1 and 2)

04-Apr-1999 -- Version 5.3 Rev 5c

Modified ES40 jumper tables (page 1)

Added FailSafe Loader differences (page 273)

Starting adding AlphaServer DS20 section

Starting adding AlphaServer ES40 section

24-Apr-1999 -- Version 5.3 Rev 5d

Modified ES40 jumper tables (page 1)

Continue adding AlphaServer DS20 section

Modified DS20 jumper tables

Continue adding AlphaServer ES40 section

Added ES40 jumper tables

Added index marks to DS20 and ES40 sections

30-Apr-1999 -- Version V5.4 Rev 1

Corrected ES40 jumper table (page 1)

Added V5.4 info to revision tables (pages 3 – 13)

Modified entire document to reflect V5.4 file names

Added memory channel 2 firmware file CCMAB022.SYS thru document

01-May-1999 -- Version V5.4 Rev 1

Updated document to include references to V5.4

Added Alpha System Websites section (page 345)

02-May-1999 -- Version V5.4 Rev 1

Added J12 and J13 to ES40 CSB detail B jumper image (page 128)

06-May-1999 -- Version V5.4 Rev 1

Modified AlphaServer 1200 floppy procedure to include the three floppy procedure. (page 56)

Modified AlphaServer 4x00 floppy procedure to include the three floppy procedure. (page 79-80)

Separated AlphaServer 8200/8400 and Compaq AlphaServer GS60/GS140 systems

- 07-May-1999** – Version V5.4 Rev 1
 Added Compaq AlphaServer DS20 section (pages 109-116)
 Added Compaq AlphaServer ES40 section (pages 117-122)
- 12-May-1999** – Version V5.4 Rev 1
 Final revision. Printed copy of V5.4 Rev 1.
- 14-May-1999** – Version V5.4 Rev 2
 Removed "on each CPU" from Build -e line on AlphaServer 1200 and 4100 (pages 61 and 85)
 Changed SRM version from 5.4-1 to 5.4-2 on the AlphaServer 1200 and 4x00 (pages 5 and 6)
- 15-May-1999** – Version V5.4 Rev 2
 Modified GS140/GS60 file names for LFU boot (page 100)
 Added Blitz's TD 2651-CR and TD 2652 to Blitz Section (pages 354 and 357)
 Added Blitz's TD 2651-CR information (page 341)
- 16-May-1999** – Version V5.4 Rev 2
 Added a 4100 Issues page (page 337)
 Added LFU floppy procedure for AlphaServer 8200/8400 (pages 91-93)
 Added LFU floppy procedure for Compaq AlphaServer GS460/GS140 (pages 105-107)
- 28-May-1999** – Version V5.4 Rev 2
 Changed -l to -l (L) on deposit commands (page 327)
 Document to be Published on ProSIC June 1999 CD
- 11-Jun-1999** – Version V5.4 Rev 3
 Added new Blitz titles (pages 361-363, 365)
- 16-Jul-1999** – Version V5.4 Rev 4
 Added new Blitz titles (pages 361-365)
- 30-Jul-1999** – Version V5.4 Rev 4
 Modified Prosic URLs
- 31-Jul-1999** – Version V5.5 Rev 1
 Updated document to include references to V5.5
- 07-Aug-1999** – Version V5.5 Rev 1
 Continue updating document to include V5.5 filenames
 Add DS10 info
- 14-Aug-1999** – Version V5.5 Rev 1
 Added Blitz's
 Modified tables to include GS60E (page 8)
 Modified page to include GS60E (page 349)
 Modified the Compaq Professional WorkStation XP1000 Section
- 28-Aug-1999** - Version V5.5 Rev 1
 Modified notesfile locations
 Modified DS10, DS20 and ES40 sections
- 10-Sep-1999** - Version V5.5 Rev 1
 Modified DS10, DS20 and ES40 sections (cont)
- 12-Sep-1999** - Version V5.5 Rev 1
 Added hyperlinks to all URLs
 Modified XP1000 and Personal Workstation sections
 Add FFNEXT and FFAUTO sections
 Add section on environmental variables

17-Sep-1999 - Version V5.5 Rev 1
 Completed section on environmental variables.
 Moved sections concerning environmental variable.

19-Sep-1999 - Version V5.5 Rev 1
 Add wwidmgr sections

24-Sep-1999 - Version V5.5 Rev 1
 Add ES40 and DS20 failsafe loader sections

26-Sep-1999 - Version V5.5 Rev 1
 Added section on Galaxy environmental variables.

03-Oct-1999 - Version V5.5 Rev 1
 Updated ES40 failsafe loader section

05-Oct-1999 - Version V5.5 Rev 1
 Added DS10 failsafe loader section
 Corrected DS20 SW2 jumper settings
 Updated DS20 jumper section (page 1)

06-Oct-1999 - Version V5.5 Rev 1
 Modified DS20 failsafe loader section.
 Modified environmental variable section
 Final revision. Printed copy of V5.5 Rev 1.

07-Oct-1999 - Version V5.5 Rev 2
 Added ES40 Blitz

14-Oct-1999 - Version V5.5 Rev 2
 Added ES40 Blitz
 Minor correction throughout document.

28-Oct-1999 - Version V5.5 Rev 2
 Added GS60/GS140 Blitz
 Minor corrections throughout document.

14-Nov-1999 - Version V5.5 Rev 3
 Modify GS60/GS140 section to remove AS8x00 references
 Added blitz's
 Added several new ProSIC links

18-Dec-1999 - Version V5.6 Rev 1
 Updated document to include references to V5.6
 Added blitz's

09-Jan-2000 - Version V5.6 Rev 1
 Added AlphaStation 255 and AlphaServer/AlphaStation clear password pages.
 Continue V5.6 update

19-Feb-2000 - Version V5.6 Rev 1
 Added firmware updates on Galaxy
 Modified DS10 FSB procedure
 Added problems with update and DE500 connected to active network
 Added KGPSA utility info

21-Feb-2000 - Version V5.6 Rev 1
 Correct minor typo's and add entries to Index

22-Feb-2000 - Version V5.6 Rev 1
 Modify DS20 failsafe loader page

24-Feb-2000 - Version V5.6 Rev 1
 Modify the Galaxy firmware update procedure page
 Add more to the Galaxy environmental variable definition page
 Modify the DS10 update using LFU

04-Mar-2000 - Version V5.6 Rev 1
 Added ES40/RMC firmware page

10-Mar-2000 - Version V5.6 Rev 1
 Modified ES40/RMC firmware page

14-Mar-2000 - Version V5.6 Rev 1
 Added GS60/GS60E/GS140 Blitz TD 2766

17-Mar-2000 - Version V5.6 Rev 1
 Added Wildfire notesfile information

24-Mar-2000 - Version V5.6 Rev 1
 Added consvar info (page 255)
 Added DS20/DS20 to save_nvram and restore_nvram commands (page 273)
 List system without failsafe loader (page 343)
 General corrections and modifications throughout document in preparation for publishing

31-Mar-2000 - Version V5.6 Rev
 Added new AlphaServer 800 firmware floppy procedure (page 363)
 Added CIXCD 4K firmware update section
 Added GS60/GS140 procedure to write CD with .iso file

04-Apr-2000 - Version V5.6 Rev 1
 Modified DS20 page to remove HAL install section

14-Apr-2000 - Version V5.6 Rev 1
 Modify XP1000 section to include VMS methods if using V5.6 firmware

14-Apr-2000 - Version V5.7 Rev 1
 Start adding V5.7 info

15-Apr-2000 - Version V5.7 Rev 1
 Modify floppy procedure on as800, as1200, as4x00, ds10 and ds20/ds20e

20-Apr-2000 - Version V5.7 Rev 1
 Added 4100/DAC960 init issue with V5.7-4 console
 Made miscellaneous corrections preparing for publishing

20-Apr-2000 - Version V5.7 Rev 2
 Added 4100/DAC960 Blitz
 Added to list of firmware Prosic pages

18-May-2000 - Version V5.7 Rev 2
 Modified VAX 7000 firmware revision tables to include subversion for V4.4 firmware

16-Jun-2000 - Version V5.7 Rev 3
 Added AlphaServer ES40 Blitz TD 2787-CR
 Added AlphaServer 1200/4x00 Blitz TD 2789
 Added EV67 srm firmware file name to ES40 pages

15-Jul-2000 - Version V5.7 Rev 3

Started GS80/GS160/GS320 section

16-Jul-2000 - Version V5.7 Rev 3

Added lp_error_target variable to the Galaxy variable page.
Continued modifying the GS80/GS160/GS320 section

01-Aug-2000 – Version V5.8 Rev 1

Added V5.8 versions to firmware tables

15-Aug-2000 – Version V5.8 Rev 2

Restored missing images and tables throughout the document

29-Aug-2000 – Version V5.8 Rev 2

Modified top and bottom margins from .7" to .5"

29-Aug-2000 – Version V5.8 Rev 2

Updated filenames and versions to reflect newer V5.8 files

15-Sep-2000 – Version V5.8 Rev 3

Updated BLITZ table
Added info on XP1000 V5.8-4 firmware

19-Jan-2001 – Version V5.8 Rev 4

Restored missing images again.

26-Jan-2001 – Version V5.9 Rev 1

Added V5.9 versions to firmware tables

27-Jan-2001 – Version V5.9 Rev 1

Added V5.9 filenames and versions up to AlphaServer GS60/GS140 section.

10-Feb-2001 – Version V5.9 Rev 1

Completed V5.9 filenames and versions. Added Blitz's and documentation references. Modified webpage addresses.

11-Feb-2001 – Version V5.9 Rev 1

Working on GS320 section.

16-Feb-2001 – Version V5.9 Rev 1

Converted four Heading 1 formatted lines to Subtitle.
Working on GS320 section.
Completed GS320 section.

07-Apr-2001 – Version V5.9 Rev 1

Adding ES40 upgrading CPUs section

13-Apr-2001 – Version V5.9 Rev 1

Update Blitz tables

04-May-2001 – Version V5.9 Rev 1

Update Blitz tables
Modify GS80/GS160/GS320 SCM Update Section
Add note to DS10 and DS20 concerning Netscape issues
Added KGPSA update pages

04-May-2001 – Version V5.9 Rev 2

Minor corrections and cosmetic changes

19-May-2001 – Version V5.9 Rev 3

Rewrite KGPSA firmware update procedure on Wildfire systems.

24-May-2001 – Version V5.9 Rev 3
Modified Turbolaser build –e command.
Added DS10 blitz

31-May-2001 – Version V6.0 Rev 1
Updated document to include the V6.0 filenames and versions

01-Jun-2001 – Version V6.0 Rev 1
Added ES45 to jumpers page
Modified DEC3000-400 article concerning SROM V1.0

01-Jul-2001 – Version V6.0 Rev 1
Added Wildfire V6.0 update example
Added ES45 Jumper pictures and definitions
Changed all ProSIC references to prosic.inet.cpqcorp.net
Added Wildfire firmware location on internet

21-Sep-2001 – Version V6.1Rev 1
Modified tables for V6.1 CD

04-Nov-2001 – Version V6.1Rev 1
Added V6.1 filenames
Added ES45 section
Modified URLs to point to Cybrary instead of ProSIC.

15-Feb-2002 – Version V6.1Rev 1
Added Blitz's
Added Turbolaser single CPU/V6.0 issue
Finish ES40 and ES45 FSL sections

01-Mar-2002 – Version V6.1Rev 2
Modified Turbolaser single CPU/V6.0 issue
Corrected ES40 pages concerning cl67srmrom.exe file name

10-Mar-2002 – Version V6.1Rev 3
Modified all links
Corrected links to .dec.com
Removed broken links

LIST OF ROM UPDATE JUMPERS, FSL UPDATE JUMPERS AND FSL SELECT JUMPERS	1
LIST OF ROM UPDATE JUMPERS, FSL UPDATE JUMPERS AND FSL SELECT JUMPERS - CONT.	2
MINIMUM ACCEPTABLE FIRMWARE CD VERSIONS FOR RECENT OS VERSIONS	3
WHAT VERSION FIRMWARE IS ON WHICH CD.....	4
ALPHASERVER 300 THRU ALPHASERVER 800 SYSTEMS	4
ALPHASERVER 1000 EV4 THRU ALPHASERVER 1000A EV4 SYSTEMS.....	5
ALPHASERVER 1000A EV5 THRU ALPHASERVER 2x00 EV4 SYSTEMS	6
ALPHASERVER 2x00 EV5 THRU ALPHASERVER 2100A EV5 SYSTEMS	7
ALPHASERVER 4x00 THRU 8x00 SYSTEMS	8
COMPAQ ALPHASERVER DS10, DS20/DS20E AND COMPAQ ALPHASERVER GS60/GS60E/GS140	9
COMPAQ ALPHASERVER GS80/GS160/GS320.....	10
ALPHASERVER ES40	11
ALPHASERVER ES45	11
DIGITAL PERSONAL WORKSTATION A/AU SERIES	12
DIGITAL ULTIMATE WORKSTATION 533A2/533AU2 SERIES AND COMPAQ PROFESSIONAL WORKSTATION XP1000	12
ALPHAStation 200 THRU ALPHAStation 255 SYSTEMS	13
ALPHAStation 400 THRU ALPHAStation 600 SYSTEMS	14
ALPHAStation 600A SYSTEMS	15
DEC 2000 SYSTEMS.....	15
DEC 3000 SYSTEMS.....	16
DEC 3000 SYSTEMS CONT	17
DEC 4000 SYSTEMS.....	18
DEC 7000/10000 SYSTEMS.....	19
VAX 7000/10000 SYSTEMS	19
ALPHA WINDOWS NT MATRIX.....	21
ALPHA SYSTEM FIRMWARE UPDATE PROCEDURES	23
ALPHASERVER 300	25
METHOD 1 - LOAD THE CONSOLE FIRMWARE OFF A LOCAL CDROM	26
SRM Console	26
ARC Console	26
METHOD 2 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	27
METHOD 3 - BOOTING OFF THE NETWORK - OPENVMS.....	27
METHOD 4 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS.....	27
Non-System Disk	27
System Disk	28
METHOD 5 - BOOT OFF OF A BOOTABLE FLOPPY	28
OpenVMS AXP	28
Digital UNIX.....	28
Windows NT	29
METHOD 6 - BOOTP NETWORK UPGRADE - TRU64 UNIX	29
ALPHASERVER 300 JUMPERS	33
MOTHERBOARD	33
ALPHASERVER 800 OR DIGITAL SERVER 3000 MODELS 3300/3305.....	35
METHOD 1 – LOAD THE CONSOLE FIRMWARE OFF A LOCAL CDROM	36
SRM Console	36
AlphaBIOS Console.....	36
METHOD 2 – BOOT THE CONSOLE CD OFF OF AN INFOSERVER.....	37
METHOD 3 – BOOTING OFF THE NETWORK – OPENVMS.....	37
METHOD 4 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS.....	37

Non-System Disk	37
System Disk	38
METHOD 5 - BOOT OFF OF A BOOTABLE FLOPPY - V5.6 FIRMWARE OR EARLIER	38
OpenVMS AXP	38
Tru64 UNIX	39
Windows NT	40
METHOD 6 - BOOT OFF OF A BOOTABLE FLOPPY - V5.7 FIRMWARE OR LATER	40
Windows NT - PC	40
Windows NT - Alpha or PC	41
Tru64 UNIX - Alpha	41
METHOD 7 - BOOTP NETWORK UPGRADE - TRU64 UNIX	42
ALPHASERVER 800 JUMPERS	45
MOTHERBOARD	45
CPU DAUGHTER CARD	46
J1 and J3 Settings	46
ALPHASERVER 1000/1000A	47
METHOD 1 - LOAD THE CONSOLE FIRMWARE OFF A LOCAL CDROM	48
SRM Console	48
ARC/AlphaBIOS Console	48
METHOD 2 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	49
METHOD 3 - BOOTING OFF THE NETWORK - OPENVMS	49
METHOD 4 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS	49
Non-System Disk	49
System Disk	50
METHOD 5 - BOOT OFF OF A BOOTABLE FLOPPY	50
OpenVMS AXP	50
Tru64 UNIX	51
Windows NT	52
METHOD 6 - BOOTP NETWORK UPGRADE - TRU64 UNIX	52
ALPHASERVER 1000/1000A JUMPERS	55
MOTHERBOARD	55
EV4 CPU	56
J4, J3 and J1 Settings	56
EV5/300 CPU	57
J3 and J4 Settings	57
EV5/333 CPU	58
J1 and J3 Settings	58
EV5/400 CPU	59
J1 and J3 Settings	59
ALPHASERVER 1200 OR DIGITAL SERVER 5000 MODELS 5300/5305 OR DIGITAL ULTIMATE WORKSTATION	61
METHOD 1 - LOAD THE CONSOLE FIRMWARE OFF A LOCAL CDROM	63
SRM Console	63
AlphaBIOS Console	63
METHOD 2 - BOOT CONSOLE CD, FIRMWARE FLOPPY OR NETWORK DEVICE	63
CD	63
Floppy	64
Network	65
METHOD 3 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	65
METHOD 4 - BOOTING OFF THE NETWORK	65
METHOD 5 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS	66
Non-System Disk	66
System Disk	66
METHOD 6 - BOOT OFF OF A BOOTABLE FLOPPY - V5.2 FIRMWARE OR EARLIER	67
OpenVMS AXP	67
Tru64 UNIX	67
Windows NT	67

METHOD 7 – BOOT OFF OF A BOOTABLE FLOPPY - V5.3 FIRMWARE OR LATER	68
Windows NT	68
METHOD 8 - BOOTP NETWORK UPGRADE - TRU64 UNIX	68
ALPHASERVER 2000/2100/2100A	73
METHOD 1 - LOAD THE CONSOLE FIRMWARE OFF A LOCAL CDROM	74
SRM Console	74
ARC Console	74
METHOD 2 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	75
METHOD 3 - BOOTING OFF THE NETWORK - OPENVMS	75
METHOD 4 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS	75
Non-System Disk	75
System Disk	76
METHOD 5 - BOOT OFF OF A BOOTABLE FLOPPY	76
OpenVMS AXP	76
Tru64 UNIX	77
Windows NT	78
METHOD 6 - BOOTP NETWORK UPGRADE - TRU64 UNIX	78
ALPHASERVER 2000/2100/2100A JUMPERS	83
ALPHASERVER 2000	83
BA720 Enclosure	83
ALPHASERVER 2100 AND 2100 RM	84
BA740/BA741 Enclosures	84
ALPHASERVER 2100A	85
ALPHASERVER 2100A RM	85
ALPHASERVER 2100A LP	86
ALPHASERVER 4000/4100 OR DIGITAL SERVER 7000 MODELS 7300/7305.....	87
METHOD 1 - LOAD THE CONSOLE FIRMWARE OFF A LOCAL CDROM	88
SRM Console	88
AlphaBIOS Console	89
METHOD 2 - BOOT CONSOLE CD, FIRMWARE FLOPPY OR NETWORK DEVICE	89
CD	89
Floppy	89
Network	90
METHOD 3 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	91
METHOD 4 - BOOTING OFF THE NETWORK	91
METHOD 5 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS	92
Non-System Disk	92
System Disk	92
METHOD 6 - BOOT OFF OF A BOOTABLE FLOPPY - V5.2 FIRMWARE OR EARLIER	92
OpenVMS AXP	92
Tru64 UNIX	93
Windows NT	93
METHOD 7 - BOOT OFF OF A BOOTABLE FLOPPY - V5.3 FIRMWARE OR LATER	93
Windows NT	93
METHOD 8 - BOOTP NETWORK UPGRADE - TRU64 UNIX	94
ALPHASERVER 4000/4100 JUMPERS	99
PCI/EISA MOTHERBOARD	99
ALPHASERVER 4000/4100 LP JUMPERS	99
PCI/EISA MOTHERBOARD	99
ALPHASERVER 8200/8400	101
METHOD 1 - BOOT THE CONSOLE CD OFF A LOCAL CDROM	102
SRM Console	102
AlphaBIOS Console	102
METHOD 2 - BOOT CONSOLE CD, FIRMWARE FLOPPY OR NETWORK DEVICE	102
CD	102

Floppy - NT.....	103
Floppy - OpenVMS.....	104
Network.....	105
METHOD 3 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	106
METHOD 4 - BOOTING OFF THE NETWORK.....	106
METHOD 5 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS.....	106
Non-System Disk	106
System Disk	107
METHOD 6 - BOOTP NETWORK UPGRADE - TRU64 UNIX	107
COMPAQ ALPHASERVER GS60/GS140	115
METHOD 1 - BOOT THE CONSOLE CD OFF A LOCAL CDROM.....	116
SRM Console	116
AlphaBIOS Console.....	116
METHOD 2 - BOOT CONSOLE CD, FIRMWARE FLOPPY OR NETWORK DEVICE	116
CD	116
Floppy - NT.....	117
Floppy - OpenVMS.....	118
Network.....	119
METHOD 3 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	119
METHOD 4 - CREATE A BOOTABLE CD USING A CD WRITER AND THE .ISO FIRMWARE FILE	120
METHOD 5 - BOOTING OFF THE NETWORK.....	120
METHOD 6 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS.....	121
Non-System Disk	121
System Disk	121
METHOD 7 - BOOTP NETWORK UPGRADE - TRU64 UNIX	121
COMPAQ ALPHASERVER GS80/GS160/GS320	129
LFU FIRMWARE UPDATE PROCEDURE	129
METHOD 1 - LOAD THE CONSOLE FIRMWARE OFF A LOCAL CDROM	131
SRM Console	131
METHOD 2 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER.....	131
METHOD 3 - CREATE A BOOTABLE CD USING A CD WRITER AND THE .ISO FIRMWARE FILE	132
METHOD 4 - BOOTING OFF THE NETWORK - OPENVMS.....	132
METHOD 5 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS.....	132
Non-System Disk	132
System Disk	133
METHOD 6 - BOOTP NETWORK UPGRADE - TRU64 UNIX	133
ERRORS	139
METHOD 6 - SCM UPDATE	140
Laptop system setup.....	140
Keaterm setup	140
Powerterm 525 setup.....	141
SCM UPDATE FILES	141
SCM UPDATE - CONDITIONS OF NOTE WHEN USING THIS UPDATE METHOD.....	142
UPDATE PROCEDURE USING SCM.....	142
SCM Update Example (PSM only).....	144
ALPHASERVER DS10 AND PROFESSIONAL WORKSTATION XP900	145
METHOD 1 - LOAD THE CONSOLE FIRMWARE OFF A LOCAL CDROM	147
SRM Console	147
AlphaBIOS Console.....	147
METHOD 2 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER.....	147
METHOD 3 - FIRMWARE FLOPPY FROM ALPHABIOS UPGRADE.....	147
METHOD 4 - USING THE CONSOLE LFU COMMAND.....	148
Floppy - CPU Firmware Only.....	148
Floppy - CPU and IO Firmware	148
CD	149
Network.....	150
METHOD 5 - BOOTING OFF THE NETWORK - OPENVMS	150
METHOD 6 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS.....	151
Non-System Disk	151

System Disk	151
METHOD 7 - BOOTP NETWORK UPGRADE – TRU64 UNIX.....	151
ALPHASERVER DS10 JUMPERS	153
MOTHERBOARD	153
ALPHASERVER DS20/DS20E	155
METHOD 1 – LOAD THE CONSOLE FIRMWARE OFF A LOCAL CDROM	157
SRM Console	157
AlphaBIOS Console.....	157
METHOD 2 – BOOT THE CONSOLE CD OFF OF AN INFOSERVER.....	157
METHOD 3 - FIRMWARE FLOPPY FROM ALPHABIOS UPGRADE.....	157
METHOD 4 - USING THE CONSOLE LFU COMMAND	158
Floppy	158
CD	159
Network.....	159
METHOD 5 - BOOTING OFF THE NETWORK - OPENVMS	161
METHOD 6 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS.....	161
Non-System Disk	161
System Disk	161
METHOD 7 - BOOTP NETWORK UPGRADE – TRU64 UNIX.....	162
ALPHASERVER DS20 JUMPERS	165
MOTHERBOARD	165
COMPAQ ALPHASERVER ES40/TS40	168
METHOD 1 – LOAD THE CONSOLE FIRMWARE OFF A LOCAL CDROM	170
SRM Console	170
AlphaBIOS Console.....	170
METHOD 2 – BOOT THE CONSOLE CD OFF OF AN INFOSERVER.....	170
METHOD 3 - BOOTING OFF THE NETWORK - OPENVMS	170
METHOD 4 - BOOT OFF OF A FLOPPY.....	171
NT	171
Tru64 UNIX.....	173
METHOD 5 - OPENVMS - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK	175
METHOD 5 - OPENVMS - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK	175
Non-System Disk	175
System Disk	175
METHOD 6 - BOOTP NETWORK UPGRADE – TRU64 UNIX.....	175
COMPAQ ALPHASERVER ES40 JUMPERS	178
CSB - SYSTEM BACKPLANE	178
COMPAQ ALPHASERVER ES45	180
METHOD 1 – LOAD THE CONSOLE FIRMWARE OFF A LOCAL CDROM	183
SRM Console	183
METHOD 2 – BOOT THE CONSOLE CD OFF OF AN INFOSERVER.....	183
METHOD 3 - BOOTING OFF THE NETWORK - OPENVMS	183
METHOD 4 – USING THE CONSOLE LFU COMMAND	184
Floppy	184
METHOD 5 - OPENVMS - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK	185
Non-System Disk	185
System Disk	186
METHOD 6 - BOOTP NETWORK UPGRADE – TRU64 UNIX.....	186
COMPAQ ALPHASERVER ES45 JUMPERS	188
CSB - SYSTEM BACKPLANE	188
ALPHASTATION 200/250 FULL FLASH SYSTEMS.....	190
METHOD 1 - BOOT THE CONSOLE CD OFF A LOCAL CDROM.....	191
SRM Console	191

ARC Console	191
METHOD 2 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	192
METHOD 3 - BOOTING OFF THE NETWORK - OPENVMS	192
METHOD 4 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS	192
Non-System Disk	192
System Disk	193
METHOD 5 - BOOT OFF OF A BOOTABLE FLOPPY	193
OpenVMS AXP	193
Tru64 UNIX	193
Windows NT	194
METHOD 6 – BOOTP NETWORK UPGRADE – TRU64 UNIX	194
ALPHASTATION 200 JUMPERS.....	198
MOTHERBOARD	198
ALPHASTATION 250 JUMPERS.....	200
MOTHERBOARD	200
ALPHASTATION 200/255 HALF FLASH SYSTEMS.....	202
METHOD 1 - LOAD THE CONSOLE FIRMWARE OFF A LOCAL CDROM	203
SRM Console	203
ARC Console	203
METHOD 2 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	203
METHOD 3 - BOOTING OFF THE NETWORK - OPENVMS	204
METHOD 4 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS	204
Non-System Disk	204
System Disk	204
METHOD 5 - BOOT OFF OF A BOOTABLE FLOPPY	205
OpenVMS AXP	205
Tru64 UNIX	205
Windows NT	205
METHOD 6 – BOOTP NETWORK UPGRADE – TRU64 UNIX	206
ALPHASTATION 200 JUMPERS.....	210
MOTHERBOARD	210
ALPHASTATION 255 JUMPERS.....	212
MOTHERBOARD	212
ALPHASERVER 400 / ALPHASTATION 400	214
METHOD 1 – LOAD THE CONSOLE FIRMWARE OFF A LOCAL CDROM	215
SRM Console	215
ARC Console	215
METHOD 2 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	216
METHOD 3 - BOOTING OFF THE NETWORK - OPENVMS	216
METHOD 4 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS	216
Non-System Disk	216
System Disk	216
METHOD 5 - BOOT OFF OF A BOOTABLE FLOPPY	217
OpenVMS AXP	217
Tru64 UNIX	217
Windows NT	218
METHOD 6 - BOOTP NETWORK UPGRADE - TRU64 UNIX	218
ALPHASERVER 400 JUMPERS	222
MOTHERBOARD JUMPERS	222
CPU JUMPERS	223
ALPHASTATION 400 JUMPERS.....	224
MOTHERBOARD JUMPERS	224
CPU JUMPERS.....	225

ALPHASTATION 500/600	226
METHOD 1 - LOAD THE CONSOLE FIRMWARE OFF A LOCAL CDROM	227
SRM Console	227
ARC Console	227
METHOD 2 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	227
METHOD 3 - BOOTING OFF THE NETWORK - OPENVMS	228
METHOD 4 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS	228
Non-System Disk	228
System Disk	228
METHOD 5 - BOOT OFF OF A BOOTABLE FLOPPY	229
OpenVMS AXP	229
Tru64 UNIX	229
Windows NT	229
METHOD 6 - BOOTP NETWORK UPGRADE - TRU64 UNIX	230
ALPHASTATION 500 JUMPER LOCATIONS	232
SYSTEM MODULE	232
ALPHASTATION 600 JUMPER LOCATIONS	234
SYSTEM MODULE	234
ALPHASTATION 600A	236
METHOD 1 - BOOT THE CONSOLE CD OFF A LOCAL CDROM	237
SRM Console	237
ARC Console	237
METHOD 2 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	237
METHOD 3 - BOOTING OFF THE NETWORK - OPENVMS	238
METHOD 4 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS	238
Non-System Disk	238
System Disk	239
METHOD 5 - BOOT OFF OF A BOOTABLE FLOPPY	239
OpenVMS AXP	239
Tru64 UNIX	240
Windows NT	240
METHOD 6 - BOOTP NETWORK UPGRADE - TRU64 UNIX	241
ALPHASTATION 600A JUMPERS.....	244
CPU MODULE.....	245
DIGITAL PERSONAL WORKSTATION A/AU SERIES.....	246
METHOD 1 - LOAD THE CONSOLE FIRMWARE OFF A LOCAL CDROM	248
SRM Console	248
ARC Console	248
METHOD 2 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	248
METHOD 3 - BOOTING OFF THE NETWORK - OPENVMS	248
METHOD 4 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS	249
Non-System Disk	249
System Disk	249
METHOD 5 - BOOT OFF OF A BOOTABLE FLOPPY	249
OpenVMS AXP	249
Tru64 UNIX	249
Windows NT	250
METHOD 6 - BOOTP NETWORK UPGRADE - TRU64 UNIX	250
COMPAQ PROFESSIONAL WORKSTATION XP1000	254
METHOD 1 - LOAD THE CONSOLE FIRMWARE OFF A LOCAL CDROM	255
METHOD 2 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER.....	255
METHOD 3 - BOOTING OFF THE NETWORK - NEED AN OPENVMS HOST ON NETWORK	255
METHOD 4 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS	255
Non-System Disk	255
System Disk	256

METHOD 5 - BOOT OFF OF A BOOTABLE FLOPPY	256
Windows NT	256
TRU64 UNIX.....	256
OpenVMS AXP	256
METHOD 6 - BOOTP NETWORK UPGRADE – TRU64 UNIX.....	257
DEC 2000 MODEL 300/500 AXP AND DECPC AXP150	260
METHOD 1 - BOOT THE CONSOLE CD OFF A LOCAL CDROM	261
METHOD 2 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	261
METHOD 3 - BOOTING OFF THE NETWORK.....	261
OpenVMS	261
Tru64 UNIX or Ultrix	262
METHOD 4 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS	262
Non-System Disk	262
System Disk	263
METHOD 5 - BOOT OFF OF A BOOTABLE FLOPPY	263
OpenVMS AXP	263
Tru64 UNIX	263
Windows NT	263
METHOD 6 - BOOTP NETWORK UPGRADE - TRU64 UNIX	264
DEC 3000 - ALL MODELS	266
METHOD 1 - BOOT THE CONSOLE CD OFF A LOCAL CDROM	267
METHOD 2 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	267
METHOD 3 - BOOTING OFF THE NETWORK.....	267
VMS System	267
Ultrix	268
METHOD 4 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS	268
Non-System Disk	268
System Disk	268
METHOD 5 - BOOT OFF OF A BOOTABLE FLOPPY	269
OpenVMS AXP	269
Tru64 UNIX	269
METHOD 6 - BOOTP NETWORK UPGRADE - TRU64 UNIX	270
DEC 3000 MODEL 300 JUMPERS	274
ROM UPDATE JUMPER	274
DEC 3000 MODEL 400, 600 AND 700 JUMPER LOCATION	274
ROM UPDATE JUMPER	274
DEC 3000 MODEL 500, 500S, 500X JUMPER LOCATIONS.....	276
SYSTEM MODULE	276
I/O MODULE.....	276
DEC 3000 MODEL 800 AND 900 ROM UPDATE JUMPER LOCATIONS	278
SYSTEM MODULE JUMPERS	278
I/O MODULE JUMPERS.....	279
DEC 4000 - MODELS 600 AND 700.....	280
METHOD 1 - BOOT THE CONSOLE CD OFF A LOCAL CDROM	281
METHOD 2 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	281
METHOD 3 - BOOTING OFF THE NETWORK.....	281
VMS System	281
METHOD 4 - BOOT OFF OF A DISK -NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS.....	281
Non-System Disk	281
System Disk	282
METHOD 5 - BOOTP NETWORK UPGRADE - TRU64 UNIX	282
DEC 7000/10000.....	284
METHOD 1 - BOOT THE CONSOLE CD OFF A LOCAL CDROM.....	285

METHOD 2 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	285
METHOD 3 - BOOTING OFF THE NETWORK	285
METHOD 4 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS	285
Non-System Disk	285
System Disk	286
VAX 7000/10000	290
METHOD 1 - BOOTING OFF A LOCAL CDROM.....	291
METHOD 2 - BOOTING OVER THE NETWORK.....	291
METHOD 3 - BOOT THE CONSOLE CD OFF OF AN INFOSERVER	291
METHOD 4 - BOOT OFF OF A DISK - NON-SYSTEM DISK AND SYSTEM DISK USING OPENVMS	292
Non-System Disk	292
System Disk	293
A DESCRIPTION OF HALCODE AND PALCODE	298
GENERIC POWERUP SEQUENCE TO LOAD CONSOLE FIRMWARE.....	300
DEFINITIONS OF ENVIRONMENTAL VARIABLES	302
DEFINITION OF GALAXY ENVIRONMENTAL VARIABLES	308
HOW TO SET CUSTOMER DEFINED ENVIRONMENTAL VARIABLES.....	310
HOW TO SET CUSTOMER DEFINED ENVIRONMENTAL VARIABLES ON A TURBOLASER	312
DESCRIPTION OF THE ENVIRONMENTAL VARIABLE BUS_PROBE_ALGORITHM.....	314
USING FFNEXT AND FFAUTO ENVIRONMENTAL VARIABLES	316
BACKGROUND OF DEVICE STATES.....	316
Behavior of "Not Connected" Devices	316
Determining a "Not Connected" Device from an HSZ80 or HSG80	316
Determining a "Not Connected" Device from the SRM Console	316
FORCING THE CONSOLE TO USE A "NOT CONNECTED" DEVICE.....	317
Using FFAUTO to Autoboot a "Not Connected" Devices	317
Using FFNEXT on "Not Connected" Devices	318
LFU SCRIPTS AND CONSOLE COMMANDS AVAILABLE.....	320
ALPHASTATION 600A	320
ALPHASERVER 1000 / 1000A	320
ALPHASERVER 2x00 / 2x00A	320
ONLINE COMMANDS FOR OSF/1,UNIX AND OPENVMS TO GET FIRMWARE AND CPU REV INFO	322
UNIX.....	322
UNIX AND OSF/1	322
OPENVMS	324
WNT	325
HOW TO DETERMINE FIRMWARE REVISION OF KZPBA-CA OR KZPBA-CB WITH OPENVMS V7.1 AND V7.2	327
HOW TO BOOT RCU OFF OF THE FIRMWARE UPDATE CD	333
HOW TO CREATE A RAID STANDALONE CONFIGURATION UTILITY [RCU] FLOPPY.....	335
PROCEDURE.....	335
Utility Filename Definitions.....	335
Firmware Filenames Definitions	335
Windows 95	335
Windows NT	336
Error if files on floppy are set read-only	337

RUNNING RCU FIRMWARE UPDATE ON AN ALPHASERVER 8200 / 8400.....	339
OVERVIEW	339
UTILITY FILENAME DEFINITIONS	339
Filenames used up to the V3.8 CD.....	339
Filenames used from the V3.9 CD and later	339
FIRMWARE FILENAMES DEFINITIONS.....	339
PROCEDURE	340
Terminal Setup	340
Console Setup	340
HOW TO RUN RCU FROM A SERIAL CONSOLE	340
Floppy	340
CD	341
HOW TO RUN RCU FROM A GRAPHICS CONSOLE (ALPHABIOS)	341
Floppy	341
CD	342
HOW TO UPDATE FIRMWARE FROM FLOPPY	342
Serial Console	342
Use floppy with firmware update utility RA200FL.EXE V3.10A renamed to SWXCRFW.EXE	343
Graphics Console	343
WHEN YOU ARE DONE.....	344
EISA CONFIGURATION UTILITY (ECU) COMMANDS	345
USING THE EISA CONFIGURATION UTILITY	345
BEFORE YOU RUN THE ECU.....	345
CONFIGURING EISA OPTIONS	345
CONFIGURING ISA OPTIONS.....	347
PROCEDURE TO UPDATE CIXCD WITH 4K PACKET FIRMWARE	349
OVERVIEW	349
RESTRICTIONS	349
DIFFERENT FILES REQUIRED TO DO THE UPDATE	349
UPDATE PROCEDURES	349
AlphaServer 8x00 and GS Series Machines.....	349
DEC7000/10000.....	350
VAX7000/10000	351
VAX6000 and VAX9000.....	351
KGPSA FILES USED FOR FIRMWARE UPDATES.....	353
UPGRADING KGPSA FIRMWARE ON GS80/GS160/GS320 MACHINES	355
OVERVIEW	355
FIRMWARE FILES AVAILABLE.....	355
CREATING A CDROM	355
To create a CD with the Option firmware Only.	355
TO CREATE A CDROM USING THE FIRMWARE .ISO FILE.....	356
EXAMPLE.....	356
ERRORS	359
UPGRADING KGPSA FIRMWARE ON TURBOLASERS OR GS60/GS60E/GS140 MACHINES	361
OVERVIEW	361
FILES AVAILABLE	361
CREATING A CDROM	361
TERMINAL SETUP	362
CONSOLE SETUP AND RUNNING UTILITY.....	362
EXAMPLE.....	363
UPGRADING KGPSA FIRMWARE FROM ALPHABIOS.....	365
OVERVIEW	365
FILES AVAILABLE	365
CREATING A CDROM	365
PROCEDURE	366

CDROM	366
Floppy	366
ERRORS	367
PROBLEMS RUNNING LP6DUTIL.EXE ON A TURBOLASER OR GS60/60E/140 MACHINE	369
USING THE KZPSA UTIL_CLI.EXE FILE TO SET KZPSA PARAMETERS.....	371
COMMAND SUMMARY	372
HELP or ?	372
EXIT SAVE	372
EXIT NO_SAVE	372
SELECT KZPSA <1-n>	372
SHOW KZPSA	372
SHOW DEVICES	372
SHOW CONFIG	372
DEFAULTS	372
SET SCSI_ID <0-15>	372
ENABLE / DISABLE FAST	373
ENABLE / DISABLE TERMPower	373
ENABLE / DISABLE RESET_ON_BOOT	373
ENABLE / DISABLE SYNC <0-15 ALL>	373
ENABLE / DISABLE WIDE <0-15 ALL>	373
ENABLE / DISABLE TAGGED_QUEUEING <0-15 ALL>	373
ENABLE / DISABLE DISCONNECT <0-15 ALL>	373
RESET SCSI_BUS	373
LOGS	373
TEST KZPSA [REPEAT] [HALT_ON_ERROR CONTINUE_ON_ERROR LOOP_ON_ERROR]	373
TEST DEVICES [REPEAT] [HALT_ON_ERROR CONTINUE_ON_ERROR LOOP_ON_ERROR]	373
KZPSA_EDIT UTILITY	377
WWIDMGR - WORLD WIDE ID MANAGER DESCRIPTION	379
ALPHASERVER WITH HSJ'S MAY GET A HARD ERROR #8 ON INIT	381
MISSING FILE MESSAGE FROM LFU FOR DEFPA FIRMWARE	383
OPTION FIRMWARE FAILS TO LOAD OFF OF FLOPPY	385
FIRMWARE UPGRADES WITH CONSOLE SECURE SET	387
HOW TO CLEAR THE SRM CONSOLE PASSWORD ON AN ALPHASTATION 500 / 600	389
OVERVIEW	389
OPENVMS	389
TRU64 UNIX	389
WINDOWS	389
PROCEDURE	390
HOW TO CLEAR THE SRM CONSOLE PASSWORD ON AN ALPHASTATION 255	391
HOW TO CLEAR THE CONSOLE PASSWORD ON AN ALPHASTATION/ALPHASERVER 400	393
HOW TO CLEAR THE SRM CONSOLE PASSWORD ON A MIATA AND MIATA GL	395
AFTER FIRMWARE UPDATE, INIT GETS BAD VALUE - MOPV3_BOOT NOT MODIFIED	397
RUNNING THE NT ARC OR ALPHABIOS CONSOLE	399
DIFFERENT ALPHASERVER'S GET "OPEN FAILURE" ON UPDATE	401

ALPHASERVER 1000/1000A EV5 FIRMWARE FROM V5.2 CD WON'T FIT ON FLOPPY	403
ALPHASERVER 1000/1000A 5/300 CPU REQUIRES V5.23 ALPHABIOS	405
ALPHASERVER 1000/1000A LED CODE CB DUE TO WRONG FIRMWARE ON MOTHERBOARD	407
HARDWARE METHOD	407
BOOTABLE FLOPPY USING OPENVMS	408
BOOTABLE FLOPPY USING A PC RUNNING WNT	409
BOOTABLE FLOPPY USING WNT ON AN ALPHA	409
BOOTABLE FLOPPY USING WNT WHEN YOU ALREADY HAVE A COPY OF MAKEBOOT.EXE.....	410
DESCRIPTION OF THE DIFFERENT FAILSAFE LOADERS (FSL) AVAILABLE	411
PROCEDURE TO MAKE A BOOTABLE FAILSAFE LOADER FLOPPY FOR MOST ALPHASTATION/ALPHASERVER SYSTEMS.....	413
BOOTABLE FLOPPY USING OPENVMS	413
BOOTABLE FLOPPY USING AN ALPHA RUNNING WNT.....	415
BOOTABLE FLOPPY USING A PC RUNNING WNT	415
BOOTABLE FLOPPY USING WNT AND ALPHABIOS FIRMWARE ZIP FILE	416
ALPHASERVER 800/DIGITAL SERVER 3000 MODEL 3300/3305 NEW FSL PROCEDURE	417
OVERVIEW	417
NECESSARY FILES	417
CREATING A BOOTABLE FIRMWARE FLOPPY	417
PC - Windows NT	417
Alpha - Windows NT	418
Alpha - TRU64 UNIX.....	418
HOW TO BUILD AND USE A FSL FLOPPY ON AN ALPHASERVER 4000/4100/1200.....	421
OVERVIEW	421
FSL FLOPPY INFORMATION	421
HOW TO BUILD A FSL LOADER FLOPPY USING OPENVMS	421
HOW TO BUILD A FSL LOADER FLOPPY USING A PC RUNNING WNT	422
HOW TO BUILD A FSL FLOPPY USING AN ALPHA RUNNING WNT	422
PROCEDURE.....	423
HOW TO BUILD AND USE A FSL FLOPPY ON AN DIGITAL SERVER 7000 MODEL 7300 AND 5000 MODEL 5300	427
OVERVIEW	427
FSL FLOPPY INFORMATION	427
HOW TO BUILD A FSL LOADER FLOPPY USING OPENVMS	427
HOW TO BUILD A FSL LOADER FLOPPY USING A PC RUNNING WNT	428
HOW TO BUILD A FSL FLOPPY USING AN ALPHA RUNNING WNT	429
PROCEDURE.....	429
MAKING A FAILSAFE LOADER FLOPPY FOR A COMPAQ ALPHASERVER ES40	433
OVERVIEW	433
FILES	433
HOW TO BUILD THE FSL FLOPPY USING THE CLSRMROM.SYS OR CLSRMROM.EXE SRM IMAGE	433
WNT/W2K - PC (clsrmmrom.sys ONLY).....	433
WNT - Alpha (clsrmmrom.sys or clsrmrom.exe).....	434
Tru64 UNIX (clsrmmrom.exe ONLY).....	434
EXAMPLE OF AN UPDATE USING THE CLSRMROM.EXE AS THE FAILSAFE LOADER.....	434
HOW TO BUILD THE FSL FLOPPY USING THE LFU FIRMWARE UPDATE IMAGE.....	437
NT - PC or Alpha	437
Tru64 UNIX	437
EXAMPLE OF AN UPDATE USING THE CLU.EXE AS THE FAILSAFE LOADER	438
MAKING A FAILSAFE LOADER FLOPPY FOR A COMPAQ ALPHASERVER ES45	441
OVERVIEW	441

HOW TO BUILD THE FLOPPY USING ES45FSL.EXE FILE WITH MKBOOT.EXE OR MAKEBOOT.EXE	441
WNT/W2k - PC.....	441
WNT - Alpha	441
UNIX – Alpha.....	442
UPDATING THE FAILSAFE BOOTER (FSB) ON A COMPAQ ALPHASERVER DS20	443
OVERVIEW.....	443
PROCEDURE TO UPDATE FSB CODE	443
CD	443
Floppy	443
MAKING A FAILSAFE BOOTER FLOPPY FOR A COMPAQ ALPHASERVER DS20	445
OVERVIEW	445
HOW TO BUILD THE FSL FLOPPY	445
MAKING A FAILSAFE BOOTER FLOPPY FOR A COMPAQ ALPHASERVER DS10	447
OVERVIEW	447
HOW TO BUILD THE FSL FLOPPY	447
MAKING A FAILSAFE LOADER FLOPPY ON A DIGITAL PERSONAL WORKSTATION	449
OVERVIEW.....	449
FIRMWARE RECOVERY PROCEDURE	449
Isolating POST Corruption.....	449
Post (SRAM) not corrupted.....	449
POST (SRAM) corrupted.....	450
PROCEDURES TO BUILD THE FLOPPY	450
Make a Bootable Floppy Using OpenVMS	450
Make a Bootable Floppy Using Tru64 UNIX	451
Make a Bootable Floppy Using Windows 95 or Windows NT on an ALPHA.....	451
Make a Bootable Floppy Using DOS, Windows 3.1, Windows 95 or Windows NT on a PC.....	451
Updating System Firmware.....	452
LOCATIONS FOR FIRMWARE ON THE INTERNET/INTRANET.....	453
CREATING A BOOTABLE FIRMWARE FLOPPY FOR THE ALPHASTATION 200, 250 AND 255	455
ALPHASERVER 2100 "CPU TYPE NOT SUPPORTED" WITH B2041-AA 5/375 CPU	457
PROCEDURE TO UPDATE FIRMWARE ON A 2100	459
ALPHASERVER 2100 FAILSAFE LOADER (FSL) OVERVIEW AND FUNCTIONS	461
OVERVIEW.....	461
FAIL-SAFE LOADER FUNCTIONS	461
AUTOMATIC ACTIVATION.....	461
MANUAL ACTIVATION.....	462
WHEN DO YOU UPDATE THE FSL	462
HOW DO YOU UPDATE THE FSL ROM	462
Method 1	463
Example of Method 1 Update.....	463
Method 2	465
Example of Method 2 Update.....	465
UPDATING FIRMWARE FROM THE FAIL-SAFE LOADER.....	467
ALPHASERVER 2X00 FSL ISSUES AND PROBLEMS	469
UNABLE TO UPDATE BOTH SRM AND ARC FROM THE FSL CONSOLE.....	469
2100 FSL_UPDATE GETS NOT = @ ADDRESS XX XX	469
UNABLE TO SET DATE AND TIME UNDER ARC AFTER REPLACING MODULE	471
ALPHASERVER 1200/4100 ISSUES	473

CERTAIN ALPHASERVERS WITH V5.7-4 GETS CONSOLE DAC960 SIZING ERRORS	475
UPDATING CONSOLE FIRMWARE ON A SYSTEM CONFIGURED AS A GALAXY	477
ALPHASERVER 8X00 IMPORTANT CAUTIONS BEFORE UPDATING FIRMWARE !!!	479
OPERATION WITH MIXED FIRMWARE REVISIONS IS NOT SUPPORTED.....	479
DO NOT ATTEMPT TO DOWN-REV THE FIRMWARE ON THE CPUs LISTED	479
ALPHASERVER 8X00 SINGLE CPU MODULES FAIL WITH CONSOLE FIRMWARE V6.0	481
COMPAQ ALPHASERVER GS60/GS60E/GS140 IMPORTANT CAUTIONS BEFORE UPDATING FIRMWARE !!!	483
OPERATION WITH MIXED FIRMWARE REVISIONS IS NOT SUPPORTED.....	483
REQUIRED MINIMUM CONSOLE FIRMWARE REVISION	483
ALPHASERVER GS60/GS140 FAILS TO BOOT FIRMWARE CD V5.4	485
DS10 WITH 600MHZ CPU HAS NO DEFAULT BOOTFILE SELECTED WITH V5.9 CD	487
DS10/DS20 INVALID IMAGE WHEN UPDATING FROM FLOPPY	489
UPGRADING ES40,ES40LP OR ES40CV TO 667MHZ OR 833MHZ CPUS.....	491
ES40.....	491
ES40LP	492
ES40CV	493
ES40LP/ES40CV RMC FIRMWARE IS DIFFERENT THAN ON THE V5.6 FIRMWARE CD	497
OVERVIEW	497
ES40 SYSTEMS DIFFERENCES.....	497
HOW TO BUILD A BOOTABLE FLOPPY	497
HOW TO UPDATE RMC FIRMWARE	498
EXAMPLE.....	499
ALPHASERVER ES40'S CONFIGURED FOR GALAXY SHOULD NOT USE V6.0 FIRMWARE	503
ES40 & GS80/GS160/GS320 SYSTEMS MAY NOT BOOT UNIX V4.0G	505
DEC7000/10000 AND VAX 7000 - ISSUES WITH FIRMWARE UPGRADES.....	507
DEC3000-400 SYSTEM HANGS AFTER UPGRADING CONSOLE FIRMWARE TO V6.1	509
DEC3000 FIRMWARE MISMATCH BETWEEN SYSTEM AND I/O ROMS.....	511
CONTENTS OF THE SYSTEM AND I/O ROMS ON A DEC 3000	513
SYSTEM ROM.....	513
I/O ROM	513
FIRMWARE/CONSOLE RELATED BLITZ'S.....	517
ALPHA SYSTEMS NOTESFILES.....	527
ALPHA SYSTEMS WEBPAGES	527
FIRMWARE DOCUMENT ON CYBRARY	528
FIRMWARE PAGES ON CYBRARY	528
FAILSAFE LOADER PROCEDURES.....	528
UPDATE PROCEDURES	528

UTILITIES/ADAPTERS.....	528
FIRMWARE LOCATIONS ON THE INTERNET	529
FIRMWARE LOCATIONS ONLINE.....	529
DOCUMENTATION SOURCES AND PAGE NUMBERS	530
INDEX	533

List of ROM Update Jumpers, FSL Update Jumpers and FSL Select Jumpers

CPU Type	ROM Location	Jumpers to Enable Flash ROM Writes	Jumpers to Enable FSL ROM or Floppy
AlphaStation 200	Motherboard	J6 1-2 - Motherboard	J2 pins 1-2
AlphaStation 250	Motherboard	J4 1-2 - Motherboard	J2 pins 1-2
AlphaStation 255	Motherboard	Switch 3 off	SW1 off, SW2 on
AlphaStation 400	CPU Module	J4 pins 1-2 CPU	J5 pins 1-2
AlphaStation 500	System Module	J18 pins 2-3 System	J13
AlphaStation 600	System Module	W13 park on 2	CPU W3 - System
AlphaStation 600A	System Module	J50 - System Module	CPU J1 Position 7
AlphaServer 300	Motherboard	J4 pins 1-2	J2 pins 1-2
AlphaServer 400	CPU Module	J4 pins 1-2 CPU	J5 pins 1-2
AlphaServer 800	Motherboard	J50 - Motherboard	CPU J1 Position 7
AlphaServer 1000/1000A	Motherboard	J50 - Motherboard	CPU J1/J4 Position 7
AlphaServer 1200	Motherboard	No Jumpers	Requests floppy when checksum fails
AlphaServer 4100	PCI Backplane	J18 - PCI Backplane	Requests floppy when checksum fails
AlphaServer 8200/8400	CPU	No Jumpers	No FSL Available
AlphaServer GS60/GS140	CPU	No Jumpers	No FSL Available
AlphaServer ES40	CSB Motherboard	J12/J13 pins 1-2 on CSB J24 2-3 on CSB (RMC)	J20/J23 pins 1-2, J22 pins 2-3 - CSB (FSL) J21 2-3 - CSB (TIG FSL) (1)
AlphaServer ES45	CSB Motherboard	J19 pins 1-2 - CSB (SR0M) J20 pins 1-2 - CSB (TIG) J7 2-3 - CSB (RMC)	J21/J23 pins 1-2, J22 pins 2-3 - CSB (FSL) J24 2-3 - CSB (TIG FSL) (1)
AlphaServer DS20/DS20E	Motherboard	SW3 #8 off	SW2 #1 on
AlphaServer DS10	Motherboard	None	SW3 #8 on
AlphaServer GS80/160/320	HPM, PBM, PSM, XSROM, SDTIO (SCM and SRM)	HPM J2 off PBM PSM J7 off	HPM J3 on PBM J60 on PSM J9 on STDIO J17 on or NVR variable SCM FORCE FSL

(1) The ES40/ES45 has 2 different FSL settings. A normal FSL and a TIG FSL

List of ROM Update Jumpers, FSL Update Jumpers and FSL Select Jumpers - Cont.

CPU Type	ROM Location	Enable FSL ROM or Floppy	Enable FSL ROM Writes
AlphaServer 2000	I/O Backplane	J6 ON	J5 On, J6 Off
AlphaServer 2100	Standard I/O	J6 ON	J5 On, J6 Off
AlphaServer 2100A	Backplane	Top SW Right	Bottom SW Right
AlphaServer 2100A RM	I/O Backplane	Left SW Down	Right SW Down
AlphaServer 2100A LP	Standard I/O	N/A	W6 installed

System Type	Location of ROM	Jumpers to Enable Flash ROM Writes
DEC 3000-300	System Board	Jumper W1 Pins 2-3
DEC 3000-400	I/O	Rom Update Jumper (Labeled)
DEC 3000-500	System and I/O	Flash Enable Jumper IN on system and IO
DEC 3000-600	I/O	Update Jumper on IO
DEC 3000-700	I/O	Update Jumper on IO
DEC 3000-800	System and I/O	J20 enable (sys) / IO jumper (See #5 on page 7-5 of EK-FLSPC-SV)
DEC 3000-900	System and I/O	J20 enable (sys) / IO jumper (See #5 on page 7-5 of EK-FLSPC-SV)
DEC 4000-600	I/O	No Jumpers
DEC 4000-700	I/O	No Jumpers
DEC 7000	CPU	No Jumpers
VAX 7000 / 10000	CPU	No Jumpers

Minimum Acceptable Firmware CD Versions for Recent OS Versions

Operating System	OS Version	Minimum Acceptable Firmware CD Version
Digital UNIX	V3.0	FW CD V2.9
	V3.0B	FW CD V3.0
	V3.2	FW CD V3.1
	V3.2A	FW CD V3.1
	V3.2B	FW CD V3.2
	V3.2C	FW CD V3.3
	V3.2D	FW CD V3.4
	V3.2E	FW CD V3.5
	V4.0	FW CD V3.5
	V3.2F	FW CD V3.6
	V3.2G	FW CD V3.6
	V4.0	FW CD V3.5
	V4.0A	FW CD V3.7
	V4.0B	FW CD V3.8
	V4.0C	FW CD V3.9
	V4.0D	FW CD V5.0
	V4.0E	FW CD V5.3
Tru64 UNIX	V4.0F	FW CD V5.4
	V4.0G	FW CD V5.9
	V5.0	FW CD V5.5
	V5.0A	FW CD V5.6
	V5.1	FW CD V5.8
	V5.1A	FW CD V5.9
	V5.2	FW CD V6.0
OpenVMS	V6.1	FW CD V2.9
	V6.1-1H2	FW CD V3.0
	V6.2	FW CD V3.2
	V7.0	FW CD V3.4
	V6.2-1H2	FW CD V3.5
	V6.2-1H3	FW CD V3.6
	V7.1	FW CD V3.8
	V7.1-1H1	FW CD V5.0
	V7.1-2	FW CD V5.3
	V7.2	FW CD V5.3
	V7.2-1	FW CD V5.3
	V7.2-2	FW CD V6.0
	V7.3	FW CD V5.9
Windows NT	V3.5	FW CD V2.9
	V3.51	FW CD V3.3
	V4.0	FW CD V3.8

Note:

V5.4 firmware contains OpenVMS Galaxy support for the AlphaServer 1200, AlphaServer 4000/4100 , AlphaServer 8200/8400 and the Compaq AlphaServer GS60/GS140

What Version Firmware is on Which CD

AlphaServer 300 thru AlphaServer 800 Systems

System Type	Filename	SRM Fw Rev	NT Fw Rev	CD Ver
AlphaServer 300	as300_v7_0	7.0	4.58	6.1
	as300_v7_0	7.0	4.58	6.0
	as300_v7_0	7.0	4.58	5.9
	as300_v7_0	7.0	4.58	5.8
	as300_v7_0	7.0	4.58	5.7
	as300_v7_0	7.0	4.58	5.6
	as300_v7_0	7.0	4.58	5.5
	as300_v7_0	7.0	4.58	5.4
	as300_v6_9	6.9	4.57	5.3
	as300_v6_8	6.8	4.56	5.2
	as300_v6_7	6.7	4.56	5.1
	as300_v6_6	6.6	4.53	5.0
	as300_v6_5	6.5	4.49	4.0
	as300_x6_2	6.2-165-1	4.49	3.9
AlphaServer 400	asv400_v7_0	7.0-9	4.58	6.1
	asv400_v7_0	7.0-9	4.58	6.0
	asv400_v7_0	7.0-9	4.58	5.9
	asv400_v7_0	7.0-9	4.58	5.8
	asv400_v7_0	7.0-9	4.58	5.7
	asv400_v7_0	7.0-9	4.58	5.6
	asv400_v7_0	7.0-9	4.58	5.5
	asv400_v7_0	7.0-9	4.58	5.4
	asv400_v6_9	6.9-4	4.57	5.3
	asv400_v6_8	6.8-2	4.56	5.2
	asv400_v6_7	6.7-2	4.56	5.1
	asv400_v6_6	6.6-1	4.53	5.0
	asv400_v6_5	6.5-2	4.53	4.0
	asv400_v5_9	6.4-1	4.49	3.9
	asv400_v5_8	6.3-2	4.49	3.8
	asv400_v5_7	5.7-1	4.49	3.7
	asv400_v5_6	4.5-0	4.45	3.6
	asv400_v5_5	5.2-30	4.41	3.5
	as400_v5_1	5.2-29	4.41	3.4
	as400_v5_0	5.0-30	4.37	3.3
AlphaServer 800 or Digital Server 3000 Model 3300/3305 (NT only)	as800_v5_8	5.8-16	5.70	6.1
	as800_v5_8	5.8-16	5.70	6.0
	as800_v5_8	5.8-16	5.70	5.9
	as800_v5_8	5.8-16	5.70	5.8
	as800_v5_7	5.7-86	5.70	5.7
	as800_v5_6	5.6-112	5.70	5.6
	as800_v5_5	5.5-78	5.69	5.5
	as800_v5_4	5.4-113	5.68	5.4
	as800_v5_3	5.3-101	5.66	5.3
	as800_v5_2	5.2-113	5.64	5.2
	as800_v5_1	5.1-202	5.64	5.1
	as800_v5_0	5.0-104	5.30	5.0
	as800_v4_9	4.9-167	5.30	4.0
	as800_v4_8	4.8-77	5.28	3.9

AlphaServer 1000 EV4 thru AlphaServer 1000A EV4 Systems

System Type	Filename	SRM Fw Rev	NT Fw Rev	CD Ver
AlphaServer 1000 EV4	as1000_e4_v5_4	5.4-101	4.58	6.1
	as1000_e4_v5_4	5.4-101	4.58	6.0
	as1000_e4_v5_4	5.4-101	4.58	5.9
	as1000_e4_v5_4	5.4-101	4.58	5.8
	as1000_e4_v5_4	5.4-101	4.58	5.7
	as1000_e4_v5_4	5.4-101	4.58	5.6
	as1000_e4_v5_4	5.4-101	4.58	5.5
	as1000_e4_v5_4	5.4-101	4.58	5.4
	as1000_e4_v5_3	5.3-89	4.57	5.3
	as1000_e4_v5_2	5.2-101	4.56	5.2
	as1000_e4_v5_1	5.1-190	4.56	5.1
	as1000_e4_v5_0	5.0-92	4.54	5.0
	as1000_e4_v4_9	4.9-155	4.54	4.0
	as1000_e4_v4_8	4.8-65	4.52	3.9
	as1000_e4_v4_7	4.7-160	4.49	3.8
	as1000_e4_v4_6	4.6-218	4.47	3.7
	as1000_e4_v4_5	4.5-69	4.47	3.6
	as1000_v5_5	3.1	4.44	3.5
	as1000_v5_3	3.0-19	4.42	3.4
	as1000_v5_1	3.0-15	4.26	3.3
	as1000_v5_0	3.0-12	4.26	3.2
	as1000_v4_0	2.0-3	4.1-19	3.1
AlphaServer 1000 EV5	as1000_e5_v5_4	5.4-104	5.68	6.1
	as1000_e5_v5_4	5.4-104	5.68	6.0
	as1000_e5_v5_4	5.4-104	5.68	5.9
	as1000_e5_v5_4	5.4-104	5.68	5.8
	as1000_e5_v5_4	5.4-104	5.68	5.7
	as1000_e5_v5_4	5.4-104	5.68	5.6
	as1000_e5_v5_4	5.4-104	5.68	5.5
	as1000_e5_v5_4	5.4-104	5.68	5.4
	as1000_e5_v5_3	5.3-92	5.66	5.3
	as1000_e5_v5_2	5.2-104	5.64	5.2
	as1000_e5_v5_1	5.1.193	5.64	5.1
	as1000_e5_v5_0	5.0-95	5.31	5.0
	as1000_e5_v4_9	4.9-158	5.31	4.0
	as1000_e5_v4_8	4.8-68	5.28	3.9
	as1000_e5_v4_7	4.7-163	5.23	3.8
	as1000_e5_v4_6	4.6-221	5.21	3.7
	as1000_e5_v4_5	4.5-78	5.13	3.6
AlphaServer 1000A EV4	as1000a_e4_v5_7	5.7-83	4.59	6.1
	as1000a_e4_v5_7	5.7-83	4.59	6.0
	as1000a_e4_v5_7	5.7-83	4.59	5.9
	as1000a_e4_v5_7	5.7-83	4.59	5.8
	as1000a_e4_v5_7	5.7-83	4.59	5.7
	as1000a_e4_v5_6	5.6-107	4.59	5.6
	as1000a_e4_v5_5	5.5-72	4.59	5.5
	as1000a_e4_v5_4	5.4-107	4.58	5.4
	as1000a_e4_v5_3	5.3-95	4.57	5.3
	as1000a_e4_v5_2	5.2-107	4.56	5.2
	as1000a_e4_v5_1	5.1.196	4.56	5.1
	as1000a_e4_v5_0	5.0-98	4.54	5.0
	as1000a_e4_v4_9	4.9-161	4.54	4.0
	as1000a_e4_v4_8	4.8-71	4.52	3.9
	as1000a_e4_v4_7	4.7-166	4.49	3.8
	as1000a_e4_v4_6	4.6-224	4.49	3.7
	as1000a_e4_v4_5	4.5-72	4.47	3.6
	as1000a_v1_1	3.1-15	4.46	3.5

AlphaServer 1000A EV5 thru AlphaServer 2x00 EV4 Systems

System Type	Filename	SRM Fw Rev	NT Fw Rev	CD Ver
AlphaServer 1000A EV5	as1000a_e5_v5_7	5.7-80	5.70	6.1
	as1000a_e5_v5_7	5.7-80	5.70	6.0
	as1000a_e5_v5_7	5.7-80	5.70	5.9
	as1000a_e5_v5_7	5.7-80	5.70	5.8
	as1000a_e5_v5_7	5.7-80	5.70	5.7
	as1000a_e5_v5_6	5.6-109	5.70	5.6
	as1000a_e5_v5_5	5.5-75	5.69	5.5
	as1000a_e5_v5_4	5.4-110	5.68	5.4
	as1000a_e5_v5_3	5.3-98	5.66	5.3
	as1000a_e5_v5_2	5.2-110	5.64	5.2
	as1000a_e5_v5_1	5.1-199	5.64	5.1
	as1000a_e5_v5_0	5.0-101	5.31	5.0
	as1000a_e5_v4_9	4.9-164	5.31	4.0
	as1000a_e5_v4_8	4.8-74	5.28	3.9
	as1000a_e5_v4_7	4.7-169	5.23	3.8
	as1000a_e5_v4_6	4.6-227	5.21	3.7
	as1000a_e5_v4_5	4.5-80	5.13	3.6
AlphaServer 1200 or Digital Server 5000 Model 5300/5305 (NT only)	as1200_v6_0	6.0-4	5.70	6.1
	as1200_v6_0	6.0-4	5.70	6.0
	as1200_v5_9	5.9-5	5.70	5.9
	as1200_v5_8	5.8-2	5.70	5.8
	as1200_v5_7	5.7-4	5.70	5.7
	as1200_v5_6	5.6-4	5.70	5.6
	as1200_v5_5	5.5-5	5.69	5.5
	as1200_v5_4	5.4-2	5.68	5.4
	as1200_v5_3	5.3-1	5.67-0	5.3
	as1200_v5_2	5.2-1	5.64-1	5.2
	as1200_v5_1	5.1-3	5.64-1	5.1
	as1200_v5_0	5.0-2	5.32	5.0
AlphaServer 2x00 EV4	as2100_e4_v5_3	5.3-2	4.59	6.1
	as2100_e4_v5_3	5.3-2	4.59	6.0
	as2100_e4_v5_3	5.3-2	4.59	5.9
	as2100_e4_v5_3	5.3-2	4.59	5.8
	as2100_e4_v5_3	5.3-2	4.59	5.7
	as2100_e4_v5_3	5.3-2	4.59	5.6
	as2100_e4_v5_3	5.3-2	4.59	5.5
	as2100_e4_v5_3	5.3-2	4.57-0	5.4
	as2100_e4_v5_3	5.3-2	4.57-0	5.3
	as2100_e4_v5_2	5.2-50	4.56-0	5.2
	as2100_e4_v5_1	5.1-133	4.56-0	5.1
	as2100_e4_v5_0	5.0-75	4.54-0	5.0
	as2100_e4_v4_9	4.9-138	4.54-0	4.0
	as2100_e4_v4_7	4.7-143	4.50-1	3.9
	as2100_e4_v4_7	4.7-143	4.50-1	3.8
	as2100_e4_v4_6	4.6-201	4.49	3.7
	as2100_e4_v4_5	4.5-51	4.47-2	3.6
	as2100_e4_v4_4	4.4-3	4.44	3.5
	as2100_e4_v4_3	4.3-222	4.43-1	3.4
	as2100_e4_v4_1	4.1-42	4.36	3.3
	as2100_e4_v4_0	4.0-3	4.25	3.2
	as2100_e4_v3_9	3.9-89	3.5-31	3.1
	as2100_e4_v3_8	3.8-49	3.5-31	3.0
	dec2100_v3_7	3.7-23	3.5-27	FIS
	dec2100_v3_6	3.6-83	3.5-23	2.9
	dec2100_v3_5	3.5-26	3.5-11	2.8

AlphaServer 2x00 EV5 thru AlphaServer 2100A EV5 Systems

System Type	Filename	SRM Fw Rev	NT Fw Rev	CD Ver
AlphaServer 2x00 EV5	as2100_e5_v5_3	5.3-6	4.59	6.1
	as2100_e5_v5_3	5.3-6	4.59	6.0
	as2100_e5_v5_3	5.3-6	4.59	5.9
	as2100_e5_v5_3	5.3-6	4.59	5.8
	as2100_e5_v5_3	5.3-6	4.59	5.7
	as2100_e5_v5_3	5.3-6	4.59	5.6
	as2100_e5_v5_3	5.3-6	4.59	5.5
	as2100_e5_v5_3	5.3-6	4.57-0	5.4
	as2100_e5_v5_3	5.3-6	4.57-0	5.3
	as2100_e5_v5_2	5.2-54	4.56-0	5.2
	as2100_e5_v5_1	5.1-138	4.56-0	5.1
	as2100_e5_v5_0	5.0-80	4.54-0	5.0
	as2100_e5_v4_9	4.9-143	4.54-0	4.0
	as2100_e5_v4_7	4.7-148	4.51-1	3.9
	as2100_e5_v4_7	4.7-148	4.51-1	3.8
	as2100_e5_v4_6	4.6-206	4.49	3.7
	as2100_e5_v4_5	4.5-55	4.47-2	3.6
	as2100_e5_v4_4	4.4-7	4.44	3.5
	as2100_e5_v4_3	4.3-226	4.43-1	3.4
	as2100_e5_v4_1	4.1-46	4.34	3.3
	as2100_e5_v4_0	4.0-7	4.30	3.2
AlphaServer 2100A EV4	as2100a_e4_v5_3	5.3-10	4.59	6.1
	as2100a_e4_v5_3	5.3-10	4.59	6.0
	as2100a_e4_v5_3	5.3-10	4.59	5.9
	as2100a_e4_v5_3	5.3-10	4.59	5.8
	as2100a_e4_v5_3	5.3-10	4.59	5.7
	as2100a_e4_v5_3	5.3-10	4.59	5.6
	as2100a_e4_v5_3	5.3-10	4.59	5.5
	as2100a_e4_v5_3	5.3-10	4.57-0	5.4
	as2100a_e4_v5_3	5.3-10	4.57-0	5.3
	as2100a_e4_v5_2	5.2-58	4.56-0	5.2
	as2100a_e4_v5_1	5.1-142	4.56-0	5.1
	as2100a_e4_v5_0	5.0-84	4.54-0	5.0
	as2100a_e4_v4_9	4.9-147	4.54-0	4.0
	as2100a_e4_v4_7	4.7-152	4.50-1	3.9
	as2100a_e4_v4_7	4.7-152	4.50-1	3.8
	as2100a_e4_v4_6	4.6-210	4.49	3.7
	as2100a_e4_v4_5	4.5-60	4.47-2	3.6
	as2100a_e4_v4_4	4.4-12	4.44	3.5
	as2100a_e4_v4_3	4.3-231	4.43-1	3.4
AlphaServer 2100A EV5	as2100a_e5_v5_3	5.3-14	4.59-0	6.1
	as2100a_e5_v5_3	5.3-14	4.59-0	6.0
	as2100a_e5_v5_3	5.3-14	4.59-0	5.9
	as2100a_e5_v5_3	5.3-14	4.59-0	5.8
	as2100a_e5_v5_3	5.3-14	4.59-0	5.7
	as2100a_e5_v5_3	5.3-14	4.59-0	5.6
	as2100a_e5_v5_3	5.3-14	4.59-0	5.5
	as2100a_e5_v5_3	5.3-14	4.57-0	5.4
	as2100a_e5_v5_3	5.3-14	4.57-0	5.3
	as2100a_e5_v5_2	5.2-62	4.56-0	5.2
	as2100a_e5_v5_1	5.1-147	4.56-0	5.1
	as2100a_e5_v5_0	5.0-89	4.54-0	5.0
	as2100a_e5_v4_9	4.9-152	4.54-0	4.0
	as2100a_e5_v4_7	4.7-157	4.51-1	3.9
	as2100a_e5_v4_7	4.7-157	4.51-1	3.8
	as2100a_e5_v4_6	4.6-215	4.49	3.7
	as2100a_e5_v4_5	4.5-64	4.47-2	3.6
	as2100a_e5_v4_4	4.4-16	4.44	3.5
	as2100a_e5_v4_3	4.3-225	4.43-1	3.4

AlphaServer 4x00 thru 8x00 Systems

System Type	Filename	SRM Fw Rev	NT Fw Rev	CD Ver
AlphaServer 4000 / 4100 or Digital Server 7000 Model 7300/7305 (NT only)	as4x00_v6_0	6.0-4	5.70-0	6.1
	as4x00_v6_0	6.0-4	5.70-0	6.0
	as4x00_v5_9	5.9-5	5.70-0	5.9
	as4x00_v5_8	5.8-2	5.70-0	5.8
	as4x00_v5_7	5.7-4	5.70-0	5.7
	as4x00_v5_6	5.6-4	5.70-0	5.6
	as4x00_v5_5	5.5-5	5.69-0	5.5
	as4x00_v5_4	5.4-2	5.68-0	5.4
	as4x00_v5_3	5.3-1	5.67-0	5.3
	as4x00_v5_2	5.2-1	5.64-1	5.2
	as4x00_v5_1	5.1-3	5.64-1	5.1
	as4x00_v5_0	5.0-2	5.32-0	5.0
	as4x00_v4_9	4.9-1	5.32-0	4.0
	as4x00_v4_8	4.8-5	5.28-0	3.9
	as4x00_v3_0	3.0-6	5.24-0	3.8
	as4x00_v2_0	2.0-0	5.21-1	3.7
	as4x00_v1_2	1.2-3	5.12-3	3.6
AlphaServer 8200 / 8400	as8000_v16	6.0-1	5.70c *	6.1
	as8000_v16	6.0-1	5.70c *	6.0
	as8000_v15	5.9-2	5.70c *	5.9
	as8000_v14	5.8-2	5.70c *	5.8
	as8000_v13	5.7-4	5.70	5.7
	as8000_v12	5.6-4	5.70	5.6
	as8000_v11	5.5	5.69	5.5
	as8000_v10	5.4-8	5.68	5.4
	as8000_v0f	5.3-11	5.36	5.3
	as8000_v0e	5.2-7	5.3-19b	5.2
	as8000_v0d	5.1-30	5.3-19b	5.1
	as8000_v0c	5.0-101	5.3-15	5.0
	as8000_v0b	4.9-20	5.3-15	4.0
	as8000_v0a	4.8-6		3.9
	as8000_v09	4.1-6		3.8
	as8000_v08	4.0-4		3.7
	as8000_v07	3.1-6		3.6
	as8000_v06	3.0-9		3.5
	as8000_v05	2.3-313		3.4
	as8000_v03	2.0-100		
	as8000_v02	1.1-2		3.3
	as8000_v01	1.0-66		3.2
	as8000_t06	4.1-86		3.1

* LFW will list version as V5.70-3 but it is actually 5.70-c

Compaq AlphaServer DS10, DS20/DS20E and Compaq AlphaServer GS60/GS60E/GS140

System Type	Filename	SRM Fw Rev	NT Fw Rev	CD Ver
DS10	ds10_v6_1	6.1-2	5.71	6.1
	ds10_v6_0	6.0-8	5.71	6.0
	ds10_v5_9	5.9-4	5.70 *	5.9
	ds10_v5_8	5.8-10	5.70 *	5.8
	ds10_v5_7	5.7-8	5.70	5.7
	ds10_v5_6	5.6-3	5.70	5.6
	ds10_v5_5	5.5-1	5.69	5.5
DS20/DS20E	ds20_v6_1	6.1-2	5.71	6.1
	ds20_v6_0	6.0-8	5.71	6.0
	ds20_v5_9	5.9-4	5.70 *	5.9
	ds20_v5_8	5.8-10	5.70	5.8
	ds20_v5_7	5.7-8	5.70	5.7
	ds20_v5_6	5.6-3	5.70	5.6 **
	ds20_v5_5	5.5-82	5.70 *	5.5
	ds20_v5_4 or pc264srm.rom / pc264nt.rom	5.4-19	5.68	Network
GS60 GS60E GS140	gs140_v60	6.0-1	5.68	6.1
	gs140_v60	6.0-1	5.68	6.0
	gs140_v59	5.9-2	5.68	5.9 (DON'T USE)
	gs140_v58	5.8-2	5.68	5.8
	gs140_v57	5.7-5	5.68	5.7
	gs140_v56_6	5.6-6	N/A	Network
	gs140_v56	5.6-4	5.68	5.6
	gs140_v55_25 ***	5.5-25	5.68	Network
	gs140_v55_23	5.5-23	5.68	Network
	gs140_v55_12	5.5-12	5.68	5.5
	gs140_v54_21	5.4-21	5.68	Network
	gs140_v54_19	5.4-19	5.68	Network
	gs140_v54_15	5.4-15	5.68	5.4
	gs140_v53_12	5.3-12	N/A	Network or CD (AG-RFCBB-BE)

* HAL revision G supports changes introduced in AlphaBIOS V5.70 for systems based on the Alpha 21264 CPU. This includes:

Compaq AlphaServer DS20 (No longer supports Windows NT after 12-31-99)

Compaq AlphaPC 264DP

Compaq Professional Workstation XP1000

When AlphaBIOS V5.70 or newer is installed on one of these machines, HAL Revision G or newer must also be installed, or the system will not boot, but will hang at the blue-screen "kernel banner" message. HAL Revision G can be obtained from:

<http://www.compaq.com/support/files/alphant/firmware/index.html>

** DS20 and DS20E are both supported with the V5.6 firmware or later.

*** gd140_v55_25 - Minimum required version for the EV67 700 MHZ CPU E2067-DA

Compaq AlphaServer GS80/GS160/GS320

System Type	Filename	SRM Fw Rev	Micro Fw Rev	CD Ver
GS80 GS160 GS320	gs320_v61	6.1-1011	6.1	6.1
	gs320_v60	6.0-514	6.0	6.0
	gs320_v59b	5.9-331	5.9	Network
	gs320_v59	5.9-111	5.9	5.9
	gs320_v58	5.8-251	5.8	Network
	gs320_v57p4	5.8-124	5.7	Network
	v57_wfupdate	5.8-121	5.7	Network
	T57_wfupdate.sys	5.8-21	5.7	Network
	V56_wfupdate.sys	5.8-1	5.6	Network

AlphaServer ES40

System Type	Filename	SRM Fw Rev	NT Fw Rev	SROM	RMC	TIG	CD Ver
ES40	es40_v6_1	6.1-3	5.71***	2.12F	2.7/2.8*	10	6.1
	es40_v6_0	6.0-31	5.71***	2.12F	2.7	10	6.0 ****
	es40_v5_9	5.9-24	5.70**	2.12F	2.6	10	5.9
	es40_v5_8	5.8-43	5.70	2.11F	2.5	10	5.8
	es40_v5_7	5.7-84	5.70	2.10F	2.4	10	5.7
	es40_v5_6	5.6-102	5.70	2.5F	2.2	10	5.6
	es40_v5_5	5.5-68	5.70	2.2F	2.1	10	5.5
		T5.4-4	5.68				Network

* There are 4 versions of the RMC firmware on the V6.1 CD.

- V2.7 for the ES40.
- I2.7 for the ES40LP
- F2.8 for the ES40CV
- G2.8 for the TS40

This firmware is NOT interchangeable.

** HAL revision G supports changes introduced in AlphaBIOS V5.70 for systems based on the Alpha 21264 CPU. This includes:

Compaq AlphaServer DS20 (No longer supports Windows NT after 12-31-99)

Compaq AlphaPC 264DP

Compaq Professional Workstation XP1000

When AlphaBIOS V5.70 or newer is installed on one of these machines, HAL Revision G or newer must also be installed, or the system will not boot, but will hang at the blue-screen "kernel banner" message. HAL Revision G can be obtained from:

<http://www.compaq.com/support/files/alphant/firmware/index.html>

*** Shows as 5.71-R1 in AlphaBIOS

**** Do not use this version with a system configured as a Galaxy.

AlphaServer ES45

System Type	Filename	SRM Fw Rev	SROM	RMC	TIG	CD Ver
ES45	es45_v6_1	6.1-3	2.18F	1.9	2.6	6.1

Digital Personal WorkStation a/au Series

System Type	Filename	SRM Fw Rev	NT Fw Rev	SROM (POST) Rev	CD Ver
Digital Personal WorkStation a/au Series	digitalpw_v72_1	7.2-1	5.70	5.90	6.1
	digitalpw_v72_1	7.2-1	5.70	5.90	6.0
	digitalpw_v72_1	7.2-1	5.70	5.90	5.9
	digitalpw_v72_1	7.2-1	5.70	5.90	5.8
	digitalpw_v72_1	7.2-1	5.70	5.90	5.7
	digitalpw_v71_3	7.1-3	5.70	5.90	5.6
	digitalpw_v7_0	7.0-10	5.68	5.90	5.5
	digitalpw_v7_0	7.0-10	5.68	5.90	5.4
	digitalpw_v6_9	6.9-7	5.67	5.90	5.3
	digitalpw_v6_8	6.8-41	5.65	5.90	5.2
	digitalpw_v6_7	6.7-196	5.64	5.70	5.1
	digitalpw_v6_6	6.6-29	5.33	4.45	5.0
	digitalpw_v6_5	6.5-72	5.31	4.40	4.0

Digital Ultimate WorkStation 533a2/533au2 Series and Compaq Professional WorkStation XP1000

System Type	Filename	SRM Fw Rev	NT Fw Rev	CD Ver
Digital Ultimate WorkStation 533a2/au2	as1200_v6_0	6.0-4	5.70	6.1
	as1200_v6_0	6.0-4	5.70	6.0
	as1200_v5_9	5.9-5	5.70	5.9
	as1200_v5_8	5.8-2	5.70	5.8
	as1200_v5_7	5.7-4	5.70	5.7
	as1200_v5_6	5.6-4	5.70	5.6
	as1200_v5_5	5.5-5	5.69-0	5.5
	as1200_v5_4	5.4-1	5.68-0	5.4
	as1200_v5_3	5.3-1	5.67-0	5.3
	as1200_v5_2	5.2-1	5.64-1	5.2
	as1200_v5_1	5.1-3	5.64-1	5.1
	as1200_v5_0	5.0-2	5.32	5.0
Compaq Professional WorkStation XP1000	xp1000_v59_1	5.9-1	5.70b	6.1
	xp1000_v59_1	5.9-1	5.70b	6.0
	xp1000_v59_1	5.9-1	5.70b	5.9
	xp1000_v58_4	5.8-3	5.70b	Network only
	xp1000_nt_v58_4 *	5.8-3	5.70b	Network only
	xp1000_v58_3	5.8-3	5.70b	5.8
	xp1000_nt_v58_3	5.8-3	5.70b	5.8
	xp1000_v57_1	5.7-1	5.70	5.7
	xp1000_v56_11	5.6-11	5.70	5.6
	xp1000_v55_7	5.5-7	5.70 **	5.5
	xp1000_v5_4	5.4-7559	5.68	5.4
	xp1000_v116	5.4-2935	5.68	Net

* See Blitz TD 2822-cr for details on these files.

** HAL revision G supports changes introduced in AlphaBIOS V5.70 for systems based on the Alpha 21264 CPU. This includes:

Compaq AlphaServer DS20

Compaq AlphaPC 264DP

Compaq Professional Workstation XP1000

When AlphaBIOS V5.70 or newer is installed on one of these machines, HAL Revision G or newer must also be installed, or the system will not boot, but will hang at the blue-screen "kernel banner" message. HAL Revision G can be obtained from:

<http://www.compaq.com/support/files/alphant/firmware/index.html>

AlphaStation 200 thru AlphaStation 255 Systems

System Type	Filename	SRM Fw Rev	NT Fw Rev	CD Ver
AlphaStation 200	as200_v7_0	7.0-9	4.58	6.1
	as200_v7_0	7.0-9	4.58	6.0
	as200_v7_0	7.0-9	4.58	5.9
	as200_v7_0	7.0-9	4.58	5.8
	as200_v7_0	7.0-9	4.58	5.7
	as200_v7_0	7.0-9	4.58	5.6
	as200_v7_0	7.0-9	4.58	5.5
	as200_v7_0	7.0-9	4.58	5.4
	as200_v6_9	6.9-4	4.57	5.3
	as200_v6_8	6.8-2	4.56	5.2
	as200_v6_7	6.7-2	4.56	5.1
	as200_v6_6	6.6-1	4.53	5.0
	as200_v6_5	6.5-2	4.53	4.0
	as200_v5_9	6.4-1	4.49	3.9
	as200_v5_8	6.3-4	4.49	3.8
	as200_v5_7	6.2-2	4.49	3.7
	as200_v5_6	6.1-2	4.45	3.6
	as200_v5_5	6.0-943	4.45	3.5
	as200_v5_1	5.2-29	4.41	3.4
	as200_v5_0	5.0-29	4.37	3.3
	as200_v4_2	4.2-2	4.28	3.2
	as200_v2_9	3.9-1387	4.1-22	3.1
	as200_v2_8	3.7-10895	3.5-13	3.0
AlphaStation 250	as200_v7_0	7.0-9	4.58	6.1
	as200_v7_0	7.0-9	4.58	6.0
	as200_v7_0	7.0-9	4.58	5.9
	as200_v7_0	7.0-9	4.58	5.8
	as200_v7_0	7.0-9	4.58	5.7
	as200_v7_0	7.0-9	4.58	5.6
	as200_v7_0	7.0-9	4.58	5.5
	as200_v7_0	7.0-9	4.58	5.4
	as200_v6_9	6.9-4	4.57	5.3
	as200_v6_8	6.8-2	4.56	5.2
	as200_v6_7	6.7-2	4.56	5.1
	as200_v6_6	6.6-1	4.53	5.0
	as200_v6_5	6.5-2	4.53	4.0
	as200_v5_9	6.4-1	4.49	3.9
	as200_v5_8	6.3-4	4.49	3.8
	as200_v5_7	6.2-2	4.49	3.7
	as200_v5_6	6.1-2	4.45	3.6
	as200_v5_5	6.0-943	4.45	3.5
	as200_v5_1	5.2-29	4.41	3.4
	as200_v5_0	5.0-29	4.37	3.3
AlphaStation 255	as255_v8_1	7.0-9	5.68	6.1
	as255_v8_1	7.0-9	5.68	6.0
	as255_v8_1	7.0-9	5.68	5.9
	as255_v8_1	7.0-9	5.68	5.8
	as255_v8_1	7.0-9	5.68	5.7
	as255_v8_1	7.0-9	5.68	5.6
	as255_v8_1	7.0-9	5.68	5.5
	as255_v8_1	7.0-9	5.68	5.4
	as255_v8_0	6.9-4	5.66	5.3
	as255_v7_9	6.8-2	5.65	5.2
	as255_v7_8	6.7-2	5.64	5.1
	as255_v7_7	6.6-1	5.30	5.0
	as255_v7_6	6.5-2	5.30	4.0
	as255_v7_5	6.4-1	5.21	3.9
	as255_v7_4	6.3-4	5.12	3.8
	as255_v7_3	6.2-2	5.12	3.7
	as255_v7_2	6.1-2	5.12	3.6
	as255_v6_9	6.0-943	5.10	3.5

AlphaStation 400 thru AlphaStation 600 Systems

System Type	Filename	SRM Fw Rev	NT Fw Rev	CD Ver
AlphaStation 400	as400_v72_1	7.2-1	4.58	6.1
	as400_v72_1	7.2-1	4.58	6.0
	as400_v72_1	7.2-1	4.58	5.9
	as400_v72_1	7.2-1	4.58	5.8
	as400_v72_1	7.2-1	4.58	5.7
	as400_v7_1	7.1-2	4.58	5.6
	as400_v7_0	7.0-9	4.58	5.5
	as400_v7_0	7.0-9	4.58	5.4
	as400_v6_9	6.9-4	4.57	5.3
	as400_v6_8	6.8-2	4.56	5.2
	as400_v6_7	6.7-2	4.56	5.1
	as400_v6_6	6.6-1	4.53	5.0
	as400_v6_5	6.5-2	4.53	4.0
	as400_v5_9	6.4-1	4.49	3.9
	as400_v5_8	6.3-4	4.49	3.8
	as400_v5_7	6.2-2	4.49	3.7
	as400_v5_6	6.1-2	4.45	3.6
	as400_v5_5	6.0-943	4.45	3.5
	as400_v5_1	5.2-29	4.41	3.4
	as400_v5_0	5.0-29	4.37	3.3
	as400_v4_2	4.2-2	4.28	3.2
	as400_v2_9	3.9-1387	4.1-22	3.1
	as400_v2_8	3.7-10895	3.5-13	3.0
AlphaStation 500	as500_v72_2	7.2-2	4.58	6.1
	as500_v72_2	7.2-2	4.58	6.0
	as500_v72_2	7.2-2	4.58	5.9
	as500_v72_2	7.2-2	4.58	5.8
	as500_v72_2	7.2-2	4.58	5.7
	as500_v7_0	7.0-10	4.58	5.6
	as500_v7_0	7.0-10	4.58	5.5
	as500_v7_0	7.0-10	4.58	5.4
	as500_v6_9	6.9-5	4.57	5.3
	as500_v6_8	6.8-2	4.56	5.2
	as500_v6_7	6.7-2	4.56	5.1
	as500_v6_6	6.6-2	4.53	5.0
	as500_v6_5	6.5-1	4.53	4.0
	as500_v6_4	6.4-1	4.52	3.9
	as500_v6_3	6.3-5	4.49	3.8
	as500_v6_2	6.2-1	4.49	3.7
	as500_v6_0	5.0-13	4.45	3.6
	as500_v5_0	5.0-13	4.45	3.5
	as500_v1_0	1.01	4.43	3.4
AlphaStation 600	as600_v72_2	7.2-2	4.58	6.1
	as600_v72_2	7.2-2	4.58	6.0
	as600_v72_2	7.2-2	4.58	5.9
	as600_v72_2	7.2-2	4.58	5.8
	as600_v72_2	7.2-2	4.58	5.7
	as600_v7_0	7.0-10	4.58	5.6
	as600_v7_0	7.0-10	4.58	5.5
	as600_v7_0	7.0-10	4.58	5.4
	as600_v6_9	6.9-5	4.57	5.3
	as600_v6_8	6.8-2	4.56	5.2
	as600_v6_7	6.7-2	4.56	5.1
	as600_v6_6	6.6-2	4.53	5.0
	as600_v6_5	6.5-1	4.53	4.0
	as600_v6_4	6.4-1	4.52	3.9
	as600_v6_3	6.3-5	4.49	3.8
	as600_v6_2	6.2-1	4.49	3.7
	as600_v6_0	5.0-13	4.45	3.6
	as600_v5_0	5.0-13	4.45	3.5
	as600_v4_1	4.1-1	4.43	3.4
	as600_v1_1	1.1-3	4.24	3.3

AlphaStation 600A Systems

System Type	Filename	SRM Fw Rev	NT Fw Rev	CD Ver
AlphaStation 600A	as600a_e5_v5_6	5.6-114	5.70	6.1
	as600a_e5_v5_6	5.6-114	5.70	6.0
	as600a_e5_v5_6	5.6-114	5.70	5.9
	as600a_e5_v5_6	5.6-114	5.70	5.8
	as600a_e5_v5_6	5.6-114	5.70	5.7
	as600a_e5_v5_6	5.6-114	5.70	5.6
	as600a_e5_v5_5	5.5-80	5.69	5.5
	as600a_e5_v5_4	5.4-115	5.68	5.4
	as600a_e5_v5_3	5.3-103	5.66	5.3
	as600a_e5_v5_2	5.2-114	5.64	5.2
	as600a_e5_v5_1	5.1-204	5.64	5.1
	as600a_e5_v5_0	5.0-106	5.30	5.0
	as600a_e5_v4_9	4.9-169	5.30	4.0
	as600a_e5_v4_8	4.8-79	5.28	3.9

DEC 2000 Systems

System Type	Filename	System FW Ver	ARC FW Version	CD Version
DEC 2x00 Models 300 and 500	dec2000_v2_2	370	4.31	6.1
	dec2000_v2_2	370	4.31	6.0
	dec2000_v2_2	370	4.31	5.9
	dec2000_v2_2	370	4.31	5.8
	dec2000_v2_2	370	4.31	5.7
	dec2000_v2_2	370	4.31	5.6
	dec2000_v2_2	370	4.31	5.5
	dec2000_v2_2	370	4.31	5.4
	dec2000_v2_2	370	4.31	5.3
	dec2000_v2_2	370	4.31	5.2
	dec2000_v2_2	370	4.31	5.1
	dec2000_v2_2	370	4.31	5.0
	dec2000_v2_2	370	4.31	4.0
	dec2000_v2_2	370	4.31	3.9
	dec2000_v2_2	370	4.31	3.8
	dec2000_v2_2	370	4.31	3.7
	dec2000_v2_2	370	4.31	3.6
	dec2000_v2_2	370	4.31	3.5
	dec2000_v2_2	370		3.4
	dec2000_v2_1	36D		3.3
	dec2000_v1_9	34A		3.2
	dec2000_v1_8	335		3.1
	dec2000_v1_7	32F		

DEC 3000 Systems

System Type	Filename	System FW Ver	I/O FW Ver	CD Ver
DEC 3000 Model 300	m300_v7_0	7.0	7.0	6.1
	m300_v7_0	7.0	7.0	6.0
	m300_v7_0	7.0	7.0	5.9
	m300_v7_0	7.0	7.0	5.8
	m300_v7_0	7.0	7.0	5.7
	m300_v7_0	7.0	7.0	5.6
	m300_v7_0	7.0	7.0	5.5
	m300_v7_0	7.0	7.0	5.4
	m300_v7_0	7.0	7.0	5.3
	m300_v7_0	7.0	7.0	5.2
	m300_v7_0	7.0	7.0	5.1
	m300_v7_0	7.0	7.0	5.0
	m300_v7_0	7.0	7.0	4.0
	m300_v7_0	7.0	7.0	3.9
	m300_v6_9	6.9	6.9	3.8
	m300_v6_8	6.8	6.8	3.7
	m300_v6_7	6.7	6.7	3.6
	m300_v6_5	6.5	6.5	3.5
	m300_v6_4	6.4	6.4	3.4
	m300_v6_2	6.2	6.2	3.3
	m300_v6_1	6.1	6.1	3.2
	m300_v6_0	6.0	6.0	3.1
	m300_v5_2	5.2	5.2	3.0
	m300_v5_1	5.1	5.1	2.9
	m300_v3_3	3.3	3.3	2.8
DEC 3000 Models 400,600 and 700	m400_v7_0	7.0	7.0	6.1
	m400_v7_0	7.0	7.0	6.0
	m400_v7_0	7.0	7.0	5.9
	m400_v7_0	7.0	7.0	5.8
	m400_v7_0	7.0	7.0	5.7
	m400_v7_0	7.0	7.0	5.6
	m400_v7_0	7.0	7.0	5.5
	m400_v7_0	7.0	7.0	5.4
	m400_v7_0	7.0	7.0	5.3
	m400_v7_0	7.0	7.0	5.2
	m400_v7_0	7.0	7.0	5.1
	m400_v7_0	7.0	7.0	5.0
	m400_v7_0	7.0	7.0	4.0
	m400_v7_0	7.0	7.0	3.9
	m400_v6_9	6.9	6.9	3.8
	m400_v6_8	6.8	6.8	3.7
	m400_v6_7	6.7	6.7	3.6
	m400_v6_5	6.5	6.5	3.5
	m400_v6_4	6.4	6.4	3.4
	m400_v6_2	6.2	6.2	3.3
	m400_v6_1	6.1	6.1	3.2
	m400_v6_0	6.0	6.0	3.1
	m400_v5_2	5.2	5.2	3.0
	m400_v5_1	5.1	5.1	2.9
	m400_v3_3	3.3	3.3	2.8

DEC 3000 Systems cont

System Type	Filename	System FW Ver	I/O FW Ver	CD Ver
DEC 3000 Models 500, 800 and 900	m500_v7_0	7.0	7.0	6.1
	m500_v7_0	7.0	7.0	6.0
	m500_v7_0	7.0	7.0	5.9
	m500_v7_0	7.0	7.0	5.8
	m500_v7_0	7.0	7.0	5.7
	m500_v7_0	7.0	7.0	5.6
	m500_v7_0	7.0	7.0	5.5
	m500_v7_0	7.0	7.0	5.4
	m500_v7_0	7.0	7.0	5.3
	m500_v7_0	7.0	7.0	5.2
	m500_v7_0	7.0	7.0	5.1
	m500_v7_0	7.0	7.0	5.0
	m500_v7_0	7.0	7.0	4.0
	m500_v7_0	7.0	7.0	3.9
	m500_v6_9	6.9	6.9	3.8
	m500_v6_8	6.8	6.8	3.7
	m500_v6_7	6.7	6.7	3.6
	m500_v6_5	6.5	6.5	3.5
	m500_v6_4	6.4	6.4	3.4
	m500_v6_2	6.2	6.2	3.3
	m500_v6_1	6.1	6.1	3.2
	m500_v6_0	6.0	6.0	3.1
	m500_v5_2	5.2	5.2	3.0
	m500_v5_1	5.1	5.1	2.9
	m500_v3_3	3.3	3.3	2.8

DEC 4000 Systems

System Type	Filename	DecChip Ver	Firmware Ver	CD Ver
DEC 4000 Models 600 and 700	cfw_v40_updp3	21064-3 -3 CPU	4.0	6.1
	cfw_v40_updp3	21064-3	4.0	6.0
	cfw_v40_updp3	21064-3	4.0	5.9
	cfw_v40_updp3	21064-3	4.0	5.8
	cfw_v40_updp3	21064-3	4.0	5.7
	cfw_v40_updp3	21064-3	4.0	5.6
	cfw_v40_updp3	21064-3	4.0	5.5
	cfw_v40_updp3	21064-3	4.0	5.4
	cfw_v40_updp3	21064-3	4.0	5.3
	cfw_v40_updp3	21064-3	4.0	5.2
	cfw_v39_updp3	21064-3	3.9	5.1
	cfw_v39_updp3	21064-3	3.9	5.0
	cfw_v39_updp3	21064-3	3.9	4.0
	cfw_v39_updp3	21064-3	3.9	3.9
	cfw_v39_updp3	21064-3	3.9	3.8
	cfw_v38_updp3	21064-3	3.8	3.7
	cfw_v38_updp3	21064-3	3.8	3.6
	cfw_v37_updp3	21064-3	3.7	3.5
	cfw_v36_updp3	21064-3	3.6-1	3.4
	cfw_v35_updp3	21064-3	3.5-5	3.3
	cfw_v35_updp3	21064-3	3.5-5	3.2
	cfw_v35_updp3	21064-3	3.5-5	3.1
	cfw_v34_updp3	21064-3	3.4	3.0
	?		?	2.9
	?		?	2.8
	cfw_v33_updp3	21064-3	3.3	2.7
	cfw_v33_updp2	21064-2 -2 CPU	3.3	2.7
	cfw_v28_ev4p3	21064-3	2.8	
	cfw_v28_ev4p2	21064-2	2.8	
	cfw_v23_e43	21064-3	2.5-5744	
	cfw_v25_ev4p2	21064-2	2.5-5744	
	cfw_v24_ev4p2	21064-2 or -3	2.4-4074	
	cfw_v23_e42	21064-2	2.3-2001	
	cfw_v23_e41	21064-1 -1 CPU	2.3-2001	
	cfw_aug12_e42	21064-2	T2.2-750	
	cfw_aug12_e41	21064-1	T2.2-750	
	cfw_jul28_e42	21064-2	T2.1-213	
	cfw_jul28_e41	21064-1	T2.1-213	
	cfw_jun29_e42	21064-2	T2.0-9381	
	cfw_jun29_e41	21064-1	T2.0-9381	
	cfw_may22_e42	21064-2	T1.8-7283	
	cfw_may22_e41	21064-1	T1.8-7293	

cfw_v33_updp2 = Last version for -2 CPU and **cfw_v23_e41** = Last version for -1 CPUs

DEC 7000/10000 Systems

System Type	Filename	Version	CD Version
DEC 7000/10000 Models 600 and 700	axp7000_v18	5.4-4819	6.1
	axp7000_v18	5.4-4819	6.0
	axp7000_v18	5.4-4819	5.9
	axp7000_v18	5.4-4819	5.8
	axp7000_v18	5.4-4819	5.7
	axp7000_v18	5.4-4819	5.6
	axp7000_v18	5.4-4819	5.5
	axp7000_v18	5.4-4819	5.4
	axp7000_v17	5.0-4814	5.3
	axp7000_v17	5.0-4814	5.2
	axp7000_v17	5.0-4814	5.1
	axp7000_v17	5.0-4814	5.0
	axp7000_v17	5.0-4814	4.0
	axp7000_v16	4.9-4812	3.9
	axp7000_v15	4.9-4812	3.8
	axp7000_v14	4.8-4792	3.7
	axp7000_v13	4.7-4792	Network Only
	axp7000_v12	4.6-4789	3.6 - DO NOT USE!
	axp7000_v11	4.5-4779	3.5
	axp7000_v10	4.4-4744	3.4
	axp7000_v0f	4.3-4740	3.3
	axp7000_v0e	4.2-4732	3.2 - DO NOT USE!
	axp7000_v0d	4.1-4697	3.1
	axp7000_v0c	4.0-4589	3.0 - Same as V2.9 except KFMSB
	axp7000_v0b	4.0-4589	2.9
	axp7000_v0a	3.2-4445	2.8
	axp7000_v09	3.1-4324	2.7
	axp7000_v08	3.0-4284	2.6

VAX 7000/10000 Systems

System Type	Filename	Firmware Version
VAX 7000/10000 Model 600	vax7000_s0e	4.4-4857 Network only - power-e-bad messages.
	vax7000_v0c	4.3-4842
	vax7000_v0b	4.2-4835
	vax7000_v0a	4.1-4820
	vax7000_v09	4.0-4765
	vax7000_v07_3	3.3 Network only - No XMI f/w
	vax7000_v07_2	3.2 Network only - No XMI f/w
	vax7000_v07_1	3.1 Network only - previously named vax7000_v08
	vax7000_v07	3.0
VAX 7000/10000 Model 700	vax7000_s0e	4.4-4857 Network only - power-e-bad messages.
	vax7000_v0c	4.3-4842
	vax7000_v0b	4.2-4835
	vax7000_v0a	4.1-4820
	vax7000_v09	4.0-4765
	vax7700_v02	1.1
	vax7700_v01	1.0
VAX 7000/10000 Model 800	vax7000_s10	4.4 Network only - multi-cpu 7800's init issue (corrects corrupt v7000_s0f image)
	vax7000_s0f	4.4 Network only - multi-cpu 7800's init issue
	vax7000_s0e	4.4-4857 Network only - power-e-bad messages.
	vax7000_v0c	4.3-4842
	vax7000_v0b	4.2-4835
	vax7000_v0a	4.1-4820

Alpha Windows NT Matrix

	HAL	Firmware	ARC	AlphaBIOS	SWXCR boot	HSZ boot	3.51	4.0
AXP 150	1,3	4.31	X		N	N	Y	Y
DEC 2000	1,3	4.31	X		N	N	Y	Y
AlphaXL								
4/2xx	1,3	4.56	X		Y	Y	Y	Y
5/xxx	2,3	5.65		X	Y	N	Y	Y
PWS 433a	4	5.65		X	N	N	N	Y
500a	4	5.65		X	N	N	N	Y
600a	4	5.65		X	N	N	N	Y
AlphaStation								
200	1,3	4.56	X		Y	Y	Y	Y
250	1,3	4.56	X		Y	Y	Y	Y
255	2,3	5.64		X	Y	Y	Y	Y
400	1,3	4.56	X		Y	Y	Y	Y
500	1,3*	4.56	X		Y	Y	Y	Y
600	1,3	4.56	X		Y	Y	Y	Y
600a	4	5.65		X	Y	Y	N	Y
1200	4#	5.65		X	Y	Y	N	Y
AlphaServer								
300	1,3	4.56	X		Y	Y	Y	Y
400	1,3	4.56	X		Y	Y	Y	Y
800	4	5.65		X	Y	Y	N	Y
1000								
4/2xx	1,3	4.56	X		Y	Y	Y	Y
5/xxx	2,4#	5.65		X	Y	Y	Y	Y
1000a								
4/2xx	2,3	4.56	X		Y	Y	Y	Y
5/xxx	2,4#	5.65		X	Y	Y	Y	Y
1200	4#	5.65		X	Y	Y	N	Y
2000								
4/2xx	1,4#	4.56	X		Y	N	Y	Y
5/3xx	1,4#	4.56	X		Y	N	Y	Y
2100								
4/2xx	1,4#	4.56	X		Y	N	Y	Y
5/3xx	1,4#	4.56	X		Y	N	Y	Y
2100a								
4/2xx	2,4#	4.56	X		Y	N	Y	Y
5/3xx	2,4#	4.56	X		Y	N	Y	Y
4000	2,4#	5.64		X	Y	Y	Y	Y
4100	2,4#	5.64		X	Y	Y	Y	Y
8x00	4#	5.35		X	Y	Y	N	Y

1. Uses HAL from 3.51 CD
2. Needs special HAL for 3.51
3. Uses HAL from 4.0 CD
4. Needs special HAL for 4.0

- * Identifies as an AlphaStation 600
 # HAL is on the 4.0 CD but causes problems

Alpha System Firmware Update Procedures

In order to perform a firmware upgrade successfully you need to follow these steps.

- Determine current firmware versions of the system (SRM, ARC/AlphaBIOS and SROM where pertinent) and options.
- Determine what firmware version you are updating to.
- Print and read the release notes for that version.
- Write down the environmental variable settings.
- Determine method to be used to do the update.
- If available you can save NVRAM data including ECU info by using the command **SAVE_NVRAM** at the >>> or the UPD> prompt depending on system type.
 - >>> or UPD> for the AlphaServer 1200, 4000, 4100, DS20 and DS20E
 - UPD> only for the AlphaServers 800/1000/1000A/2000/2100/2100A and the AlphaStation 600A.
- Boot the firmware.
- You will see either a UPD> , Apu-> , or Function? prompt depending on the system or file used. Depending on the prompt the commands display differently.
 - Apu-> prompt
 - Allows Updates of SRM or ARC/AlphaBIOS
 - Uses a separate option file for updates
 - Verify will only say successful but not list a version
 - UPD> prompt
 - Will allow a list to see current and update versions
 - Will allow updates of SRM or ARC/AlphaBIOS and certain options
 - Verify will list version number and if it Passed.
 - Function
 - Function? prompt
 - Has similar functionality found at the UPD> prompt.
- Execute an UPDATE command.
 - Update SRM, ARC/AlphaBIOS, SROM, DROM (depending on system)
 - Update Options as needed. May require booting a specific option firmware file
- If updating options may need to load a separate file with option firmware
 - PCI options on AlphaServer 300 and AlphaStation 200/250/255/400
 - PCI_V1_4.EXE
 - PCI options on AlphaStation 500/600 and Digital Personal Workstation a/au
 - PCI_V6_2.EXE
 - Compaq Professional WorkStation XP1000
 - PCI_V5_7.exe
 - TurboChannel options on the DEC 3000
 - TC_V2_2.EXE
- After update ALWAYS do a verify
- After EXIT power cycle the machine
- Reset any console variables you have changed. Not all systems use the same variables. The main ones to be concerned with are
 - Auto_action
 - Boot_osflags
 - Bootdef_dev
 - Console
 - EW*0_mode
 - Os_type
 - Pk*0_host_id
 - Sys_model_num
 - Sys_serial_num
- Reboot OS

AlphaServer 300

The AlphaServer 300 system contains 4 flash roms on the CPU module. Two contain ARC console firmware for Windows NT and two contain SRM console firmware for Digital UNIX and OpenVMS. The ability to write to these roms is controlled by jumper J4 on the CPU motherboard. When ever the CPU motherboard is replaced the firmware will need to be updated. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available. There is also a failsafe loader floppy function. It is selected by jumper J2 on the motherboard.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off of an infoservert using the Alpha AXP System Firmware Update Utility CD.
- Over the network using the .SYS firmware file.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- Off of a bootable floppy OpenVMS, Unix or NT.
- From the BOOTP server (Unix).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision by the power on display, SHOW commands or from online SDA with a CLUE CONFIG command.
- Record all console environmental variables by typing SHOW * at the >>>.
- Determine method and firmware version you will be using to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Verify the ROM Update Jumpers are in the correct positions.
- Boot the firmware file (LFU).
- Use the verify and update commands at the Apu-> prompt.
- When done exit from LFU.
- Reboot LFU using the device firmware file to update device firmware.
- Power off/on the machine to reload the new firmware.
- Reset any Environmental variables that were changed and reboot.

1. Get the current firmware revision at power on or with console show commands.

Power on display

```
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.  
ef.df.ee.ed.ec.f4.eb.....ea.e9.e8.e7.e6.e5.  
6.4-1, built on Feb 3 1997 at 16:20:48
```

```
>>> show version
```

```
Version                6.4-1 Jul 18 1995 16:20:48
```

```
>>> show pal
```

```
PAL                    VMS PALcode X5.48-107, OSF PALcode X1.35-76
```

```
>>> show config
```

```
Firmware  
SRM Console:   V6.4-1  
ARC Console:   4.49  
Serial ROM:    V3.4  
Diag ROM:      V1.7  
Processor  
DECchip (tm) 21064-2    166Mhz 512KB Cache
```

```

MEMORY
  32 Meg of System Memory
  Bank 0 = 16 Mbytes(8 MB Per Simm) Starting at 0x0
  Bank 1 = 16 Mbytes(8 MB Per Simm) Starting at 0x1000000
  Bank 2 = No Memory Detected
PCI Bus
  Bus 00 Slot 06: NCR      810 Scsi Controller
                        pka0.7.0.6.0    SCSI Bus ID 7
                        dka0.0.0.6.0    RZ26L
                        dka400.4.0.6.0  RRD43

  Bus 00 Slot 07: Intel SIO 82378
  Bus 00 Slot 11: Digital ZLXp Graphics Controller
  Bus 00 Slot 12: Digital DE435 Network Controller
                        ewa0.0.0.12.0    08-00-2B-E2-1C-25

```

ISA Slot	Device	Name	Type	Enabled	BaseAddr	IRQ	DMA
0	0	MOUSE	Embedded	Yes	60	12	
	1	KBD	Embedded	Yes	60	1	
	2	COM1	Embedded	Yes	3f8	4	
	3	COM2	Embedded	Yes	2f8	3	
	4	LPT1	Embedded	Yes	3bc	7	
	5	FLOPPY	Embedded	Yes	3f0	6	2
2	0	PCXBJ	Singleport	Yes	530	9	0

2. >>> **show** or **show *** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.

```

Bootdef_dev
Boot_osflags
Auto_action

```

3. Check that the ROM update jumper is enabled. Consult the Service Manual for its location and setting. It should be enabled by default.
4. Boot the firmware using one of the following six methods.

Method 1 - Load the Console Firmware Off a Local CDROM

SRM Console

- a. Insert the CD in the local CDROM.
- b. >>> **Boot -fl 0,a0 DKA400**
 BOOTFILE:[alpha300]as300_v7_0.exe - for the AlphaServer 300

Note: These filenames will change with different console versions.

 Apu-> See step 5 below for update procedure.

ARC Console

- a. Insert the CD in the local CDROM.
- b. Enter the ARC menu by typing **ARC** or initializing system if os_type = NT
- c. Select **Supplementary Menu** and **Install new Firmware**

Caution

If you are running the V4.49 ARC console you will not be able to use the "Install new Firmware" utility. The SRM firmware will need to be updated from the >>>.

Method 2 - Boot the Console CD Off of an Infoserver

- a. Insert CD in the Infoserver
- b. >>> **boot ewa0 -file filename** (leave off the .sys extension)

Method 3 - Booting off the Network - OpenVMS

- a. Copy firmware.sys file to MOM\$LOAD of an existing node in the cluster
- b. Set the attributes on the file with the following commands:
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.sys**
- c. Enable service on that node from NCP
\$ **MC NCP**
MC NCP> **Show Known Circuit Characteristic**
Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

Circuit = BNA-0 - **Circuit name will change from system to system**
State = on
Service = disabled (if enabled skip to boot command)
Counter timer = 65534
Designated router = 28.1023 (CXO28A)
Cost = 4
Maximum routers allowed = 33
Router priority = 64
Hello timer = 15
Type = Ethernet
Adjacent node = 28.1023 (CXO28A)
Listen timer = 30

NCP> **Set Circ BNA-0 State OFF** - *This step will stop network activity*
NCP> **Set Circ BNA-0 Service Enable**
NCP> **Set Circ BNA-0 State ON**
- d. >>> **b ewa0 -fi filename**
Leave off .SYS or node that services request will get an error - **BAD MOP FID)**

Method 4 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

Non-System Disk

- a. Locate the firmware.exe file
- b. Set the attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.exe**
\$ **copy/contiguous firmware.exe "non_system_disk":[directory]**
- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

\$ MCR Writeboot

Update VAX portion of boot block (default is Y): **No**

Update Alpha portion of boot block (default is Y): **Yes**

Target system device (and boot file if not VMB.EXE): **\$1\$DUA5:[TEMP]as300_v6_9.exe**

- d. >>> **b -fl 0,0 dua5**

System Disk

- a. Only steps a and b above are used. Do NOT execute writeboot step c.
- b. Specify the flags of 0,a0 and use "system_disk":[sys0.sysexec]filename for bootfile.

```
>>> boot -fl 0,a0 dua0
bootfile: dua0:[sys0.sysexec]as300_v7_0.exe
```

Method 5 - Boot Off of a Bootable Floppy

OpenVMS AXP

- a. Init and mount floppy. Create a directory and copy the firmware to the floppy with the following commands.
\$ **init/dens=HD/index=begin dva0: fwupdate**
\$ **mount dva0: fwupdate**
\$ **create/dir dva0:[ALPHA300]**
\$ **copy/contiguous as300_v7_0.exe dva0:[ALPHA300]fwupdate.exe**
- b. **MCR Writeboot**
Update VAX portion of boot block (default is Y): **No**
Update Alpha portion of boot block (default is Y):**Yes**
[enter AXP bootfile:] **dva0:[ALPHA300]fwupdate.exe**
- c. Dismount the disk and shutdown VMS.
\$ **dismount dva0:**
- d. Insert the floppy on the target system and boot it from the >>>.
>>> **boot dva0**

Digital UNIX

- a. Go to <http://ftp.digital.com/pub/Digital/Alpha/firmware/>
- b. Copy the firmware.exe file from the Alpha300 directory to your system and rename fwupdate.exe
- c. Download the file mkbootfirm.tar from the firmware website.
<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/mkbootfirm.tar>

You can untar mkbootfirm on your target Tru64 UNIX system with the command:
tar xvf mkbootfirm.tar
- d. Make sure you have a floppy that has been low-level formatted.
For example, to low-level format a floppy in drive 0:
fddisk -fmt /dev/rfd0a
- e. Change default to directory with mkbootfirm.exe
cd mkbootfirm
- f. Run mkbootfirm on the .exe firmware image that you downloaded.
mkbootfirm uses a .exe firmware image to create a file that can be dd'd to floppy. The following will create a bootable floppy from a downloaded .exe firmware image:

./mkbootfirm fwupdate.exe | dd of=/dev/rfd0c bs=64k

NOTE: Assumes mkbootfirm.exe is in current directory and floppy is in drive 0.

- g. Insert the floppy on the target system and boot it from the SRM console:
>>> **boot dva0**

Windows NT

- a. Copy the firmware file to a FAT formatted floppy with the update image filename a:\fwupdate.exe.
- b. Shut down NT and from the ARC menu, select "Install new firmware".

Caution

If you are running the V4.49 ARC console you will not be able to use the "Install new Firmware" utility. The SRM firmware will need to be updated from the >>>.

Method 6 - BOOTP Network Upgrade - Tru64 UNIX

- a. Mount the Firmware Update CD using the following command:
`# mount -rt cdfs -o noversion /dev/rz4c /mnt`
- b. Modify or Create the Client Database in the /etc/bootptab File
`<host>:ht:<hw_type>:ha=<hw_addr>:bf=<filename>:ip=<ip_addr>`
where:
`host` is the system name in /etc/hosts
`hw_type` is the hardware type. Proteon is ht = 4.
Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.
`hw_addr` is the hardware address: use the console command show device.
`filename` is the name of the default bootfile image:
`ip_addr` is the Internet protocol address of the system name in /etc/hosts.
The following is an example of a bootptab file for the AlphaServer 300
bigsox:ht=1:ha=08002b236423:bf=/mnt/ALPHA300/as300_v7_0.EXE;1:ip=16.182.0.87
- c. Modify the /etc/inetd.conf file. Uncommon the tftp and bootps process. It should look like the following example:

```
tftp    dgram udp wait root    /usr/sbin/tftpd    tftpd /mnt
bootps  dgram upd wait root    /usr/sbin/bootpd   bootpd
```
- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**
`# ps aux | grep ine`
`# kill process# <ine process number>`
- e. Restart the inetd daemon:
`# /usr/sbin/inetd`

Note

The bootpd and tftp daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

Use Man bootpd and man tftpd

- f. Enter the following command to boot from the BOOTP server:
`>>> boot -p bootp ewa0`

Should a boot file "pathname" need to be specified in must be in quotes

`>>> boot -p bootp ewa0 -file "/dir1/dir2/filename"`

5. Update the firmware from the Apu-> prompt

```
Apu-> update
APU-I VERIFY LOADED ROM IMAGE
APU-I VERIFY LOADED ROM IMAGE DONE
APU-I VERIFY LOADED ROM IMAGE
APU-I VERIFY LOADED ROM IMAGE DONE
APU-I VERIFY LOADED ROM IMAGE
APU-I VERIFY LOADED ROM IMAGE DONE
APU-I *** ROMS 0,1 CONTENTS WILL BE DESTROYED ***
APU-I ARE YOU READY TO PROGRAM DEVICE ? (Y/N )Y
APU-I ROM SET NOT ERASED
APU-I PRECHARGING DEVICE
APU-I ERASING ROM DEVICE
APU-I PROGRAMMING DEVICE
APU-I ROM 0 VERIFYING ROM IMAGE
APU-I PROGRAMMING COMPLETED
SRM Rom Update Successful
APU-I VERIFY LOADED ROM IMAGE
APU-I VERIFY LOADED ROM IMAGE DONE
APU-I ROM SET NOT ERASED
APU-I PRECHARGING DEVICE
APU-I ERASING ROM DEVICE
APU-I PROGRAMMING DEVICE
APU-I ROM 1 VERIFYING ROM IMAGE
APU-I PROGRAMMING COMPLETED
ARC Rom Update Successfull
Apu->
```

6. Verify that update was successful and exit

```
Apu-> verify
ARC Rom Verify Successful
SRM Rom Verify Successful

Apu-> exit
Hard Reset or ...Cycle Power ...
```

7. Power cycle the machine to load console firmware. If you are updating device firmware, proceed to step 8.

8. Update the option firmware. There are only two PCI devices supported by this PCI Update Utility. The DEFPA (FDDI) and the KZPSA (SCSI).

a. Boot the Option firmware file.

```
>>> boot -fl 0,a0 DKA400
Bootfile: [ALPHA300]as300_pci_v1_4.exe for the AlphaServer 300
```

This filename may change with each new firmware release.

```
*** PCI/EISA Loadable Firmware Update Utility V6.0 ***
-----
Function      Description
-----
Display      Displays the system's configuration table.
Exit         Done exit LFU (reset.)
List         Lists the device, revision, firmware name,
              and update revision.
Update       Replaces current firmware with loadable data
              image.
Verify       Compares loadable and hardware images.
? or Help    Scrolls this function table.
-----
```



```

UPD> list
Device      Current Revision  Filename      Update Revision
fwa0        2.46             dfxaa_fw      3.20
pka0        A06             kzpsa_fw      A12

```

```

UPD> update * or update
Will update all LFU supported devices found in this system

```

```

UPD> update pka0 - will update device PKA0
Confirm update on:
pka0
[Y/(N)] Y

```

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

```

pka0          Updating to A12...  Verifying A12...  PASSED.

```

```

UPD> update fwa0 -path mopdl:new_firm/eza0
Will update the device named fwa0 with firmware NEW_FIRM from the network.

```

```

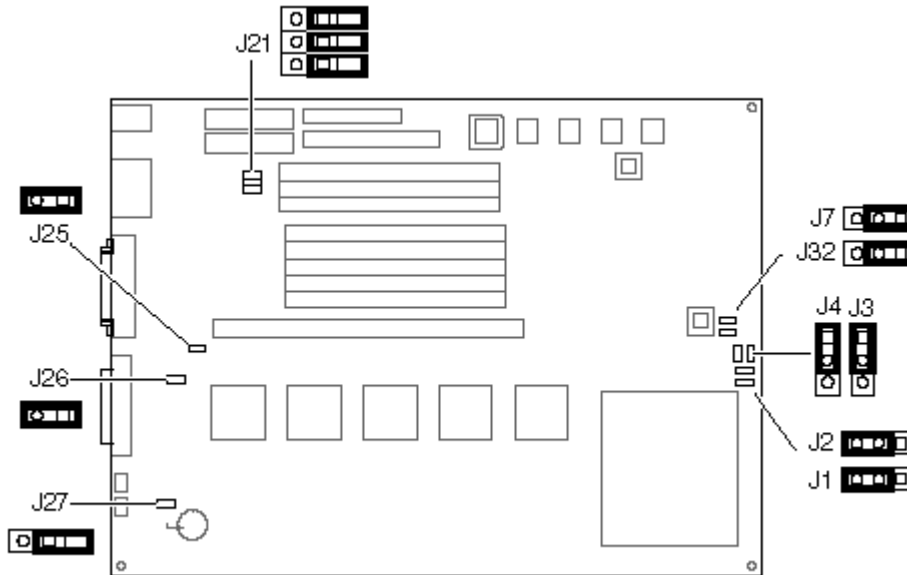
UPD> verify
fwa0          Verifying 3.20...  PASSED.
pka0          Verifying A12...  PASSED.

```

9. Power cycle the machine to load console firmware then reset any environmental variables that changed, init and reboot.

AlphaServer 300 Jumpers

Motherboard



Jumper	Pins	Function	Description
J1	(1 to 2) (2 to 3) (D)	Mini-console Jump to main console	Leave at factory default.
J2	(1 to 2) (2 to 3) (D)	Boot floppy Normal (flashROM load)	The DROM code uses J2 to determine whether an image from a floppy disk or the flashROM containing the console firmware should be loaded into memory and started.
J3	(1 to 2) (D) (2 to 3)	Reset Halt Interrupt Request	The front-panel push button can be set to cause either a Reset or a Halt Interrupt Request.
J4	(1 to 2) (D) (2 to 3)	Enables flashROM writes Disables writes	Leave at factory default.
J7	(1 to 2) (D) (2 to 3)	267 MHz CPU Not used	Leave at factory default.
J21	(1 to 2) (3 to 4) (5 to 6) Hang off 1 (D) Hang off 3 (D) Hang off 5 (D)	Not used	Leave at factory default.
J25	(1 to 2) (D) Removed	87332 Super I/O chip 87312 Super I/O chip	Leave at factory default.
J26	(1 to 2) (D) Removed	87332 Super I/O chip 87312 Super I/O chip	Leave at factory default.
J27	(1 to 2) Hang off 1 (D)	Disables sensing for presence of external cable Enables sensing for presence of external SCSI cable	J27 controls the automatic SCSI bus terminator. If an external SCSI cable is attached to the SCSI connector, the automatic SCSI terminator turns off. Therefore, the SCSI bus must be terminated at the end of the external bus. When sensing is disabled (J27 1 to 2 installed), an external SCSI terminator is always required, even if no external SCSI devices are present.
J32	(1 to 2) (D) (2 to 3)	267 MHz CPU Not used	Leave at factory default.

(D) = Default setting.

AlphaServer 800 or Digital Server 3000 Models 3300/3305

The AlphaServer 800 system contains one flash rom on the motherboard that contains ARC console firmware for Windows NT and SRM console firmware for Tru64 UNIX and OpenVMS. When ever the motherboard is replaced the firmware may need to be updated. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available. Rom updates are enabled by jumper J50 on the motherboard.

This machine also has a backup console called the failsafe loader. It is enabled for use by one jumper on the CPU daughter card. The failsafe loader floppy can be created from files over the Internet. Please note that option firmware is separated from the system firmware. There are extra procedures required to update options when not using the firmware update CD.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off of an infoservert using the Alpha AXP System Firmware Update Utility CD.
- Over the network using the .SYS firmware file.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- Off of a bootable floppy OpenVMS, Unix or NT.
- From the BOOTP server (Unix).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision by the power on display, SHOW commands or from online SDA with a CLUE CONFIG command.
- Record all console environmental variables by typing SHOW * at the >>>.
- Determine method and firmware version you will be using to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Verify the ROM Update Jumpers are in the correct positions.
- Boot the firmware file (LFU).
- Use the verify and update commands at the UPD> prompt.
- When done exit from LFU.
- Power off/on the machine to reload the new firmware.
- Reset any Environmental variables that were changed and reboot.

1. Get the current firmware revision at power on or with console show commands

```
Power on display
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.ef.df.ee.f4.
probing hose 0, PCI
ed.ec.eb.....ea.e9.e8.e7.e6.e5.e4.e3.e2.e1.e0.
V4.7-3046, built on Dec 4 1996 at 01:56:52
```

```
>>> show version
```

```
Version                               V4.7-3046 Dec 4 1996 at 01:56:52
```

```
>>> show pal
```

```
PAL                                   VMS PALcode V1.19-2, OSF PALcode V1.19-2
```

```

>>> show config
Firmware
SRM Console:    V4.7-3046
ARC Console:    4.49
PALcode:        VMS PALcode V1.19-2, OSF PALcode V1.21-4
Serial ROM:     0.4
Processor
DECchip - 21164A-2    400MHZ
System
Motherboard Revision: 0
MEMORY
    64 Meg of System Memory
    Bank 0 = 64 Mbytes(16 MB Per Simm) Starting at 0x00000000
    Bank 1 = No Memory Detected

Slot Option      Hose 0, Bus 0,   PCI
  5  Qlogic ISP1020    pka0.7.0.5.0    SCSI Bus ID 7
                        dka0.0.0.5.0    RZ28
                        dka400.4.0.5.0  RRD43

    a. S3 Trio64/Trio32
    7  Intel 82375eB    Bridge to Bus 1, EISA
    11 DECchip 20140-AA ewb0.0.0.12.0    00-00-C0-33-E0-0D
Slot Option      Hose 0, Bus 1,   EISA
  1  DE425            ewa0.0.1001.0    08-00-2B-3E-BC-B5
Slot Option      Hose 0, Bus 2,   PCI
  2  Qlogic ISP1020    pkb0.7.0.2002.0    SCSI Bus ID 7
  3  Qlogic ISP1020    pkc0.7.0.2003.0    SCSI Bus ID 7
                        dkc0.0.0.2003.0    RZ25

```

2. >>> **show** or **show *** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.

```

    Bootdef_dev
    Boot_osflags
    Auto_action

```

3. Check that the ROM update jumper is enabled. Consult the Service Manual for its location and setting. It should be enabled by default.
4. Boot the firmware using one of the following six methods.

Method 1 - Load the Console Firmware Off a Local CDROM

SRM Console

- a. Insert the CD in the local CDROM.
- b. >>> **Boot -fl 0,a0 DKA400**
 BOOTFILE: **[alpha800]as800_v5_8.exe** - for the AlphaServer 800
Note: These filenames will change with different console versions.
 Apu-> See step 5 below for update procedure.

AlphaBIOS Console

- a. Insert the CD in the local CDROM.
- b. Enter the AlphaBIOS menu by typing **ARC** or **AlphaBIOS** or initializing the system when **os_type = nt**
- c. AlphaBIOS -Select **F2** to go into Setup then select **Upgrade AlphaBIOS**

Method 2 - Boot the Console CD Off of an Infoserwer

- a. Insert CD in the Infoserwer
- b. >>> **boot ewa0 -file filename** (leave off the .sys extension)

Method 3 - Booting Off the Network - OpenVMS

- a. Copy the firmware.sys file and the option firmware files to MOM\$LOAD of an existing node in the cluster. (These versions are from the V5.9 CD)

as800_v5_8.sys - System firmware
as800fw.sys - This file tells the update utility which option files to load.
ccmab022.sys - CCMAB firmware (PCI Memory channel 2 adapter)
dfeaa130.sys - DEFEA firmware (EISA DEC FDDI controller. Pass 1 module only)
dfeab320.sys - DEFEA firmware (EISA FDDI controller. All modules after pass 1)
dfxaa320.sys - DEFPA/DEFEA firmware (PCI or EISA based DEC FDDI controller)
kzpsaal2.sys - KZPSA firmware (Fast wide differential PCI-SCSI module)

- b. Set the VMS attributes on the file with the following command.
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.sys**

- c. Enable service on that node from NCP

\$ **MC NCP**

MC NCP> **Show Known Circuit Characteristic**

Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

Circuit = BNA-0 - **Circuit name will change from system to system**

State = on

Service = disabled (if enabled skip to boot command)

Counter timer = 65534

Designated router = 28.1023 (CXO28A)

Cost = 4

Maximum routers allowed = 33

Router priority = 64

Hello timer = 15

Type = Ethernet

Adjacent node = 28.1023 (CXO28A)

Listen timer = 30

NCP> **Set Circ BNA-0 State OFF** - This step will stop network activity

NCP> **Set Circ BNA-0 Service Enable**

NCP> **Set Circ BNA-0 State ON**

- d. >>> **b ewa0 -fi filename** (Leave off .SYS will get an error - **BAD MOP FID**)

Method 4 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

Non-System Disk

- a. Locate the firmware.exe file
- b. Set the attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.exe**
\$ **copy/contiguous firmware.exe "non-system_disk":[directory]**
- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.
\$ **MCR Writeboot**
Update VAX portion of boot block (default is Y): **No**
Update Alpha portion of boot block (default is Y): **Yes**
Target system device (and boot file if not VMB.EXE): **\$1\$dua5:[TEMP]filename.exe**
- d. >>> **b -fl 0,0 dua5**

Note: Updating options via this method is only supported if the system disk is on the NCR810 SCSI bus (the on-board SCSI).

- e. To update the option firmware, first create an options directory.
\$ **set def dua5:[000000]**
\$ **create/dir [.options]**
- f. Copy the option firmware files to the options directory.
as800fw.txt
ccmab022.sys
dfeaa130.sys
dfeab320.sys
dfxaa320.sys
kzpsaal2.sys
- g. When booting the update utility enter the device name where the option firmware is located.

System Disk

- a. Only steps a and b above are used. Do NOT execute writeboot step c. For the option firmware use the "system disk" as the disk device.
- b. Specify the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for the bootfile.
- c. >>> **b -fl 0,a0 dua0**
bootfile: **dua0:[sys0.sysexec]as800_v5_8.exe**

Method 5 - Boot Off of a Bootable Floppy - V5.6 Firmware or Earlier

OpenVMS AXP

- a. Init and mount to floppy. Create a directory and copy the firmware to the floppy with the following commands.
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) as800_v5_6.exe**
\$ **init/dens=HD/index=begin dva0: fwupdate**
\$ **mount dva0: fwupdate**
\$ **create/dir dva0:[ALPHA800]**
\$ **copy/contiguous as800_v5_6.exe dva0:[ALPHA800]fwupdate.exe**
- b. **MCR Writeboot**
Update VAX portion of boot block (default is Y): **No**
Update Alpha portion of boot block (default is Y): **Yes**
[enter AXP bootfile:] **dva0:[ALPHA800]fwupdate.exe**
- c. Dismount the disk and shutdown VMS.
\$ **dismount dva0:**
- d. Insert the floppy on the target system and boot it from the >>>.
>>> **boot dva0**
- e. If you wish to update option firmware you must create a second floppy with option firmware on it. Download the following files from the Website.
as800fw.txt
ccmab022.sys
dfeaa130.sys
dfeab320.sys
dfxaa320.sys
kzpsaal2.sys

- f. Enter the following commands to create the options floppy:


```
$ init/dens=HD/index=begin dva0: optionfw
$ mount dva0: optionfw
$ create/dir dva0:[options] - Note:The directory name must be [options]
$ copy as800fw.txt dva0:[options]
$ copy ccmab022.sys dva0:[options]
$ copy dfeaa130.sys dva0:[options]
$ copy dfeab320.sys dva0:[options]
$ copy dfxaa320.sys dva0:[options]
$ copy kzpsaa12.sys dva0:[options]
$ dismount dva0:
```
- g. Insert the floppy when it asks for the options firmware and enter the location.

Tru64 UNIX

- a. Go to <http://ftp.digital.com/pub/Digital/Alpha/firmware/>
- b. Copy the firmware.exe file from the Alpha800 directory to your system and rename it fwupdate.exe
- c. Download the file mkbootfirm.tar from the firmware website.
<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/mkbootfirm.tar>
 You can untar mkbootfirm on your target Tru64 UNIX system with the command:

```
# tar xvf mkbootfirm.tar
```
- d. Make sure you have a floppy that has been low-level formatted.
 For example, to low-level format a floppy in drive 0:

```
fddisk -fmt /dev/rfd0a
```
- e. Change default to directory with mkbootfirm.exe

```
cd mkbootfirm
```
- f. Run mkbootfirm on the .exe firmware image that you downloaded. mkbootfirm uses a .exe firmware image to create a file that can be dd'd to floppy. The following will create a bootable floppy from a downloaded .exe firmware image:

```
./mkbootfirm fwupdate.exe | dd of=/dev/rfd0c bs=64k
```

NOTE: Assumes mkbootfirm.exe is in current directory and floppy is in drive 0.

- g. Insert the floppy on the target system and boot it from the SRM console:

```
>>> boot dva0
```
- h. If you wish to update option firmware you must create a second floppy with option firmware on it. Go to the firmware website and follow this procedure.
- i. Download the file v39_options.dd. This file name changes with different console versions.
- j. Make sure you have a floppy that has been low-level formatted.
 For example, to low-level format a floppy in drive 0:

```
fddisk -fmt /dev/rfd0a
```
- k. Enter the command:

```
dd if=v39_options.dd of=/dev/rfd0c bs=64k
```

NOTE: Assumes v39_options.dd is in current directory and floppy is in drive 0.

- l. After booting the firmware floppy created with mkbootfirm, the update utility will complain that it cannot find the options files on either CD or floppy, and will prompt for a device to look for the options files. Simply insert the options you created above, type the device name of the floppy (e.g. dva0) and hit > to load the options firmware.

Windows NT

- a. Copy the firmware file to a FAT formatted floppy with the update image filename a:\fwupdate.exe.
- b. Shut down NT and from the NT Console menu, select "Install new firmware".
- c. If you wish to update the options firmware, you must create a second floppy. Download the following files from the options directory at the firmware website.
 - as800fw.txt**
 - ccmab022.sys**
 - dfeaa130.sys**
 - dfeab320.sys**
 - dfxaa320.sys**
 - kzpsaal2.sys**
- d. FAT format a floppy and copy the files to the floppy.
- e. When the utility asks for the options floppy, insert it and tell the utility the device it is located on.

Method 6 - Boot Off of a Bootable Floppy - V5.7 Firmware or Later

Starting with the V5.7 firmware you can not fit all the firmware on one floppy. You must use a two disk method.

Windows NT - PC

- a. Locate and copy to your system hard disk cru.exe, crarcrom.exe and mkboot.exe from interim directory of the firmware website at <http://ftp.digital.com/pub/Digital/Alpha/firmware/interim/>
- b. Fat format two floppies.
- c. From a DOS prompt, change you default to the directory where the above files are located.
- d. Make the floppy bootable with the following DOS command
C:\ mkboot cru.exe
- e. Copy crarcrom.exe to the second floppy.
- f. Insert the 1st floppy and type B DVA0.
- g. At the update prompt type exit and answer **Y** to the manual update question.
>>> boot DVA0
UPD> exit
Do you want to do a manual update? [y/(n)] **y**
- h. Execute the following command at the UPD> prompt to load SRM firmware.
UPD> update srm
- i. Insert the floppy with the arc firmware and execute the following command
UPD> update arc -path fat:\crarcrom.exe/dva0 (can omit the " \ ")
- j. Exit out of the utility and reset the machine to reload the console code.

If you execute the verify command it will indicate file is missing for the AlphaBIOS firmware.

Windows NT - Alpha or PC

- a. Locate and save the following files to your Alpha or PC. Save them on the top level directory of any disk. makeboot.exe can be found on Cybrary at <http://cybrary.inet.cpqcorp.net/DOWNLOAD/UTILITIES/SYSTEM/makeboot.zip>
 - makeboot.exe Alpha image to make a bootable disk
 - mkboot.exe PC/ALPHA NT image to make a bootable disk
 - cru.exe LFU and SRM firmware
 - crarcrom.exe AlphaBIOS firmware
- b. Fat format two floppies
- c. From an MSDOS window execute the following command
makeboot -f cru.exe or
mkboot cru.exe
- d. Save the crarcrom.exe file to a second fat formatted floppy.
- e. The first floppy is bootable and will also function as a FSL floppy. Insert the floppy in the system and at the >>> type **B DVA0**.
- f. At the UPD> type **exit** and answer **Y** to the question Do you want to do a manual update. This will bring you back to the UPD> prompt.
- g. Now update SRM with the command
UPD> **UPDATE SRM**
- h. To update AlphaBIOS, install the second floppy and type the command
UPD> **update arc -path fat:\crarcrom.exe/dva0 .**

If you execute the verify command it will indicate file is missing for the AlphaBIOS firmware.

Tru64 UNIX - Alpha

- a. Locate and save the following files to your Alpha or PC. Save them on the top level directory of any disk. They can be found in the interim directory of the firmware website at <http://ftp.digital.com/pub/Digital/Alpha/firmware/interim/>
 - mkbootfirm.exe Alpha/UNIX image to make a bootable disk
 - mkbootfirm.tar Alpha/UNIX .exe image in tar format
 - cru.exe LFU and SRM firmware
 - crarcrom.exe AlphaBIOS firmware
- b. If you loaded the .tar file you must untar it using the command
tar xvf mkbootfirm.tar.

This will create a mkbootfirm directory. Make sure you save cru.exe to this directory.

If you loaded the mkbootfirm image form the interim directory of the firmware webpage, you will need to set execute permissions on the file. Use the command
chmod 755 mkbootfirm or **chmod +x mkbootfirm**
- c. Insert floppy diskette 1.
- d. Change directory to where files were downloaded. Make sure mkbootfirm and cru.exe are in the same directory
cd [to directory with files]

- e. Format the floppy.
`# fdisk -fmt /dev/rfd0a` or

 With Tru64 UNIX V5.0 you can do one of the following
`# fdisk -fmt /dev/rdisk/floppy0a` or
`# cd /dev`
`# ./MAKEDEV fd0`
`# fdisk -fmt /dev/rfd0a`
- f. From directory where files are located execute the following
`# ./mkbootfirm clu.exe |dd of=/dev/rfd0c bs=64k`
- g. Insert floppy diskette 2.
- h. Create a soft link to /dev/fddrive with the following command
`# ln -s /dev/rfd0c /dev/fddrive`
- i. Format the floppy. See step 5 for commands.
- j. Add a DOS format onto the floppy disk
`# /usr/bin/mtools/mformat -s 18 a:`
- k. Use mwrite to low level copy UNIX to DOS the SRM and ARC firmware.
`# /usr/bin/mtools/mwrite clsrmmrom.exe a:\clsrmmrom.exe`
`# /usr/bin/mtools/mwrite clarcrom.exe a:\clarcrom.exe`
- l. Insert the first floppy in the system and at the >>> type **b dva0**.
- m. Answer **Y** to the "Do you want to do a manual update? [y/(n)]" question.
 This will bring you back to the UPD> prompt.
- n. At the UPD? prompt update SRM with the command
`UPD> update srm`
- o. Now insert the second floppy. Upgrade AlphaBIOS firmware with the command
`UPD> update arc -path fat:\crarcrom.exe/dva0`

Method 7 - BOOTP Network Upgrade - Tru64 UNIX

- a. Mount the Firmware Update CD using the following command:
`# mount -rt cdfs -o noversion /dev/rz4c /mnt`
- b. Modify or Create the Client Database in the /etc/bootptab File
`<host>:ht:<hw_type>:ha=<hw_addr>:bf=<filename>:ip=<ip_addr>`

 where:
host is the system name in /etc/hosts

hw_type is the hardware type. Proteon is ht = 4.
 Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.

hw_addr is the hardware address: use the console command show device.

filename is the name of the default bootfile image:

ip_addr is the Internet protocol address of the system name in /etc/hosts.

 The following is an example of a bootptab file for the AlphaServer 800 :
`bigsox:ht=1:ha=08002b236423:bf=/mnt/ALPHA800/AS800_V5_8.EXE;1:ip=16.182.0.87`

- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:

```
tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt
bootps dgram udp wait root /usr/sbin/bootpd bootpd
```
- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**

```
# ps aux | grep ine
# kill process# <ine process number>
```
- e. Restart the inetd daemon:

```
# /usr/sbin/inetd
```

Note

The bootpd and tftpd daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

Use Man bootpd and man tftpd

- f. Enter the following command to boot from the BOOTP server:

```
>>> boot -p bootp ewa0
```

Should a boot file "pathname" need to be specified in must be in quotes

```
>>> boot -p bootp ewa0 -file "/dir1/dir2/filename"
```

- g. Currently there is no BOOTP support for updating option firmware.

5. At the UPD> prompt save contents of NVRAM to floppy using **SAVE_NVRAM**.

6. List the current firmware version.

```
UPD> list
```

Device	Current Revision	Filename	Update Revision
ARC	v5.69	arc_fw	v5.70
SRM	v5.5-78	srn_fw	v5.8-16
pkc0	A12	kzpsa_fw	A12
		dfeaa_fw	1.3
		dfeab_fw	3.20
		dfxaa_fw	3.20
		ccmab_fw	22.0

7. Update the firmware from the UPD> prompt

```
UPD> update
Confirm update on:
ARC
SRM
pkc0
[Y/(N)]y
WARNING: updates may take several minutes to complete for each device.
```

DO NOT ABORT!

```
ARC      Updating to v5.70... Verifying v5.70... PASSED.
SRM      Updating to v5.8-16... Verifying v5.8-16... PASSED.
pkc0     Updating to A12... Verifying A12... PASSED.
UPD>
```

8. Verify that update was successful and exit

```
UPD> verify
ARC          Verifying v5.70...  PASSED.
SRM          Verifying v5.8-16... PASSED.
pkc0         Verifying A12...  PASSED.
```

```
UPD> exit
Initializing....
```

9. Power cycle the machine to load console firmware. Reboot firmware CD and execute a **RESTORE NVRAM** if you saved it in step 5. If you are updating device firmware, proceed to step 10. If you are done reset any environmental variables that changed, init and reboot.

10. Update the option firmware. The V5.9 CD supports updates on the PCI options DEFPA (FDDI), KZPSA (SCSI) and the EISA option DEFEA (FDDI).

a. Boot the firmware CD or use one of the above methods to load only options firmware.

```
>>> boot -fl 0,a0 DKA400
```

```
UPD> list
```

Device	Current Revision	Filename	Update Revision
fwa0	2.46	dfxaa_fw	3.20
pka0	A06	kzpsa_fw	A12

```
UPD> update * or update
Will update all LFU supported devices found in this system
```

```
UPD> update pka0 - will update device PKA0
```

Confirm update on:

pka0

[Y/(N)]Y

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

```
pka0          Updating to A12...  Verifying A12...  PASSED.
```

```
UPD> update fwa0 -path mopdl:new_firm/eza0
```

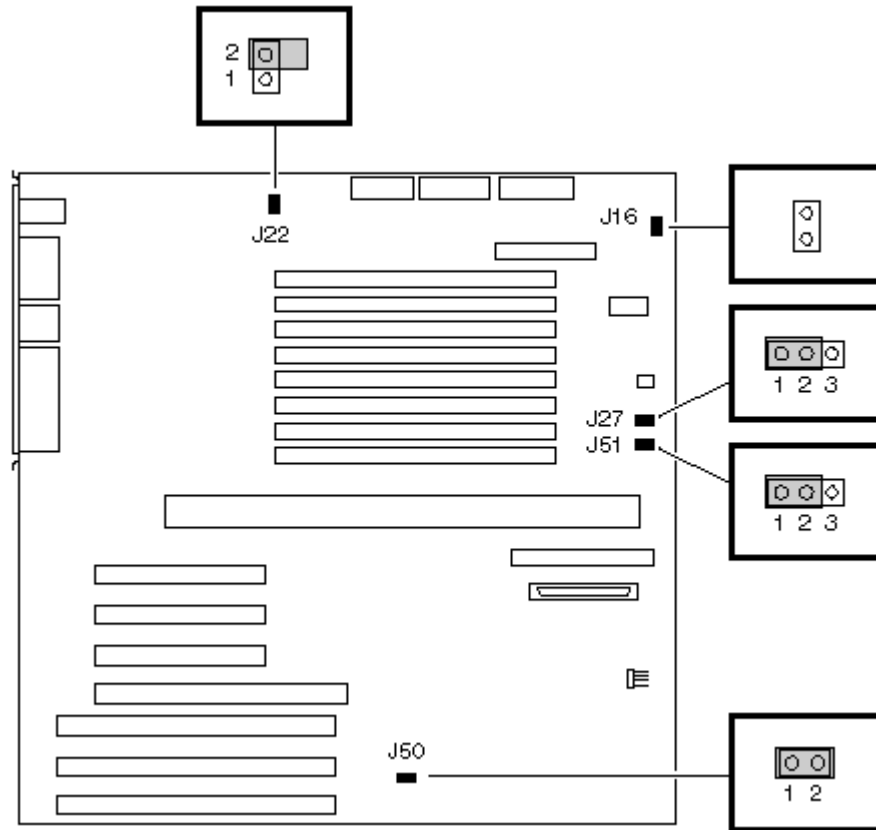
Will update the device named fwa0 with firmware NEW_FIRM from the network.

```
UPD> verify
fwa0          Verifying 3.20...  PASSED.
pka0          Verifying A12...  PASSED.
```

11. Power cycle the machine to load console firmware then reset any environmental variables that changed, init and reboot.

AlphaServer 800 Jumpers

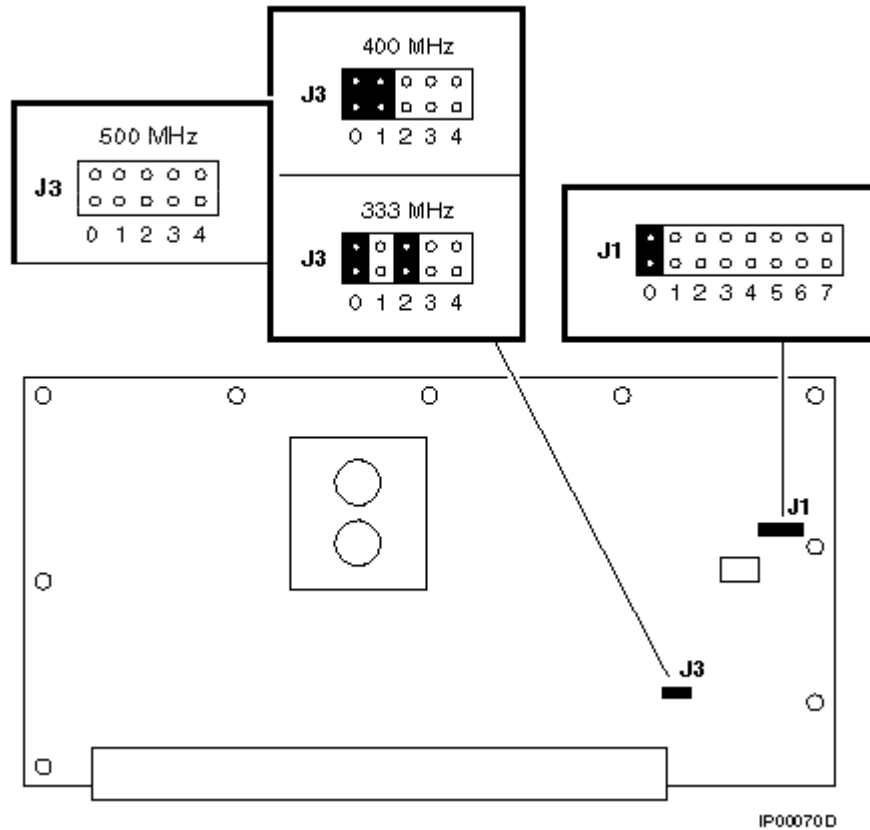
Motherboard



Jumper	Name	Description	Default Setting
J16	Fan fail override	Allows the fan failure detection logic to be disabled to accommodate alternative enclosures	This jumper is not installed on AlphaServer 800 systems
J22	Remote Management Console (RMC)	Sets default values to the RMV NVRAM	Disabled
J27	VGA Enable	When enabled the on-board VGA logic is activated	Enabled for onboard VGA; Disabled if an EISA- or PCI-based VGA option is installed
J50	Flash ROM VPP Enable	Permits the 12V voltage needed to update the flash ROMs	Jumper installed (enabled)
J51	SCSI Termination	Allows the internal SCSI terminator to be disabled	Enabled

CPU Daughter Card

J1 and J3 Settings



The figure above shows the settings for the J3 jumper depending on CPU speed. This jumper affects the clock speed and other critical system settings.

Bank	J1 Jumper Setting Functions
0	Standard boot setting
1	Power up with backup cache disabled: Allows the system to run despite bad B-cache until a replacement CPU board is available
2	Power up to the fail-safe loader with backup cache disabled
3	Mini console setting (Internal use only)
4	Mini console setting (Internal use only)
5	Mini console setting (Internal use only)
6	Mini console setting (Internal use only)
7	Fail-safe loader setting: Attempt to boot from the fail-safe loader diskette at power-up

AlphaServer 1000/1000A

The AlphaServer 1000/1000A systems have flash roms on the motherboard that contain ARC console firmware for Windows NT and SRM console firmware for Tru64 UNIX and OpenVMS. When ever the motherboard is replaced or the CPU's are upgraded or downgraded between EV4 and EV5 CPU's the firmware will need to be updated. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available. Writes to the flash ROM are enabled with jumper J50 on the motherboard. This machine also has a backup console called the failsafe loader. It is enabled for use by one jumper on the CPU daughter card. The failsafe loader will attempt to load firmware off of the firmware floppy. Please note that option firmware is separated from the system firmware. There are extra procedures required to update options when not using the firmware update CD.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off of an infoservert using the Alpha AXP System Firmware Update Utility CD.
- Over the network using the .SYS firmware file.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- Off of a bootable floppy OpenVMS, Unix or NT.
- From the BOOTP server (Unix).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision by the power on display, SHOW commands or from online SDA with a CLUE CONFIG command.
- Record all console environmental variables by typing SHOW * at the >>>.
- Determine method and firmware version you will be using to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Verify the ROM Update Jumpers are in the correct positions.
- Boot the firmware file (LFU).
- Use the verify and update commands at the UPD> prompt.
- When done exit from LFU.
- Power off/on the machine to reload the new firmware.
- Reset any Environmental variables that were changed and reboot.

The 1000 and 1000A systems have several scripts available to help with firmware operations. Below is a list and description of the different ones available. Only use the scripts on CPUs with older Main Logic Boards 54-23499-01.

Do not use on the newer 54-23499-02 logic boards.

- **cpu_downgrade** - loads an EV4 SRM and ARC image into the flash roms.
Use when downgrading from an EV5 CPU to an EV4 CPU.
- **cpu_upgrade** - loads an EV5 SRM and ARC image into the flash roms.
Use when upgrading from an EV4 CPU to an EV5 CPU.

1. Get the current firmware revision at power on or with console show commands

Power on display

```
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.  
ef. ee. ed. ec. eb. f4. ea. e9. e8. e7. e6. e5. e4.  
X4.6-218, built on Jul 18 1995 at 16:20:48
```

```
>>> show version
```

```
Version                               X4.6-218 Sep 13 1995 16:20:48
```

```
>>> show pal
```

```
PAL                                   VMS PALcode X5.48-101, OSF PALcode X1.35-66
```

```

>>> show config
Firmware
SRM Console:    X4.6-218
ARC Console:    4.49
PALcode:        VMS PALcode X5.65-4, OSF PALcode X1.45-9
Serial ROM:     V1.2

Processor
DECchip (tm) 21064-2

MEMORY
  64 Meg of System Memory
  Bank 0 = 64 Mbytes(16 MB Per Simm) Starting at 0x00000000
  Bank 1 = No Memory Detected
  Bank 2 = No Memory Detected
  Bank 3 = No Memory Detected

PCI Bus
  Bus 00 Slot 06: NCR    810 Scsi Controller
                        pka0.7.0.6.0    SCSI Bus ID 7
                        dka0.0.0.6.0    RZ28
                        dka400.4.0.6.0  RRD43

  Bus 00 Slot 07: Intel 8275EB PCI to EISA Bridge

  Bus 00 Slot 12: DECchip 21040 Network Controller
                        ewa0.0.0.12.0    08-00-2B-E5-59-AE

EISA Bus Modules (installed)
  Slot 2  CPQ3011

```

2. >>> **show** or **show *** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.

```

  Bootdef_dev
  Boot_osflags
  Auto_action

```

3. Check that the ROM update jumper is enabled. Consult the Service Manual for its location and setting. It should be enabled by default.
4. Boot the firmware using one of the following six methods.

Method 1 - Load the Console Firmware Off a Local CDROM

SRM Console

- a. Insert the CD in the local CDROM.
- b. >>> **Boot -fl 0,a0 DKA400**
 BOOTFILE:[alpha1000]as1000_e4_v5_4.exe - for the AlphaServer 1000 EV4
 [alpha1000]as1000_e5_v5_4.exe - for the AlphaServer 1000 EV5
 [alpha1000A]as1000a_e4_v5_7.exe -for the AlphaServer 1000A EV4
 [alpha1000A]as1000a_e5_v5_7.exe -for the AlphaServer 1000A EV5

Note: These filenames will change with different console versions.

Apu-> See step 5 below for update procedure.

ARC/AlphaBIOS Console

- a. Insert the CD in the local CDROM.
- b. Enter the ARC or AlphaBIOS menu by typing **ARC** or **AlphaBIOS** or initialize the system when os_type = nt
- c. ARC - Select **Supplementary Menu** and **Install new Firmware**
 AlphaBIOS -Select **F2** to go into Setup then select **Upgrade AlphaBIOS**

Method 2 - Boot the Console CD Off of an Infoserwer

- a. Insert CD in the Infoserwer
- b. >>> **boot ewa0 -file filename** (leave off the .sys extension)

Method 3 - Booting Off the Network - OpenVMS

- a. Copy the firmware.sys file and the option firmware files to MOM\$LOAD of an existing node in the cluster. (These versions are from the 5.9 CD and may change)

asl000fw.sys - This file is read first. It tells utility which files to load.
ccmab022.sys - CCMAB firmware (PCI Memory channel 2 adapter)
dfeaal30.sys - DEFEA firmware (EISA DEC FDDI controller. Pass 1 module only)
dfeab320.sys - DEFEA firmware (EISA FDDI controller. All modules after pass 1)
dfxaa320.sys - DEFPA/DEFEA firmware (PCI or EISA based DEC FDDI controller)
kzpsaal2.sys - KZPSA firmware (Fast wide differential PCI-SCSI module)

- b. Set the VMS attributes on the file with the following command.
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.sys**

- c. Enable service on that node from NCP

```
$ MC NCP
MC NCP> Show Known Circuit Characteristic
Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

Circuit = BNA-0 - Circuit name will change from system to system
State = on
Service = disabled (if enabled skip to boot command)
Counter timer = 65534
Designated router = 28.1023 (CX028A)
Cost = 4
Maximum routers allowed = 33
Router priority = 64
Hello timer = 15
Type = Ethernet
Adjacent node = 28.1023 (CX028A)
Listen timer = 30

NCP> Set Circ BNA-0 State OFF - This step will stop network activity
NCP> Set Circ BNA-0 Service Enable
NCP> Set Circ BNA-0 State ON
```

- d. >>> **b ewa0 -fi filename** (Leave off .SYS or will get error - BAD MOP FID)

Method 4 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

Non-System Disk

- a. Locate the firmware.exe file
- b. Set the attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:

```
$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.exe
$ copy/contiguous firmware.exe "non-system_disk":[directory]
```

- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

```
$ MCR Writeboot
Update VAX portion of boot block (default is Y): No
Update Alpha portion of boot block (default is Y): Yes
Target system device (and boot file if not VMB.EXE): $1$dua5: [temp] filename.exe
```

- d. >>> **b -fl 0,0 dua5**

Note: Updating options via this method is only supported if the system disk is on the NCR810 SCSI bus (the on-board SCSI).

- e. To update the option firmware, first create an options directory.
\$ **set def dua5:[000000]**
\$ **create/dir [.options]**
- f. Copy the option firmware files to the options directory.
as1000fw.txt
ccmab022.sys
dfeaa130.sys
dfeab320.sys
dfxaa320.sys
kzpsaal2.sys
- g. When booting the update utility enter the device name where the option firmware is located.

System Disk

- a. Only steps a and b above are used. Do NOT execute writeboot step c. For the option firmware use the "system disk" as the disk device.
- b. Specify the flags of 0,a0 a0 and use "system disk":[sys0.sysexec]filename for bootfile.

```
>>> b -fl 0,a0 dua0
bootfile: dua0:[sys0.sysexec]as1000_e4_v5_4.exe
```

Method 5 - Boot Off of a Bootable Floppy

OpenVMS AXP

- a. Init and mount to floppy. Create a directory and copy the firmware to the floppy with the following commands. The commands shown are for the AlphaServer 1000 EV4. For all other systems use the directory and files listed in method 1.
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) as1000_e4_v5_4.exe**
\$ **init/dens=HD/index=begin dva0: fwupdate**
\$ **mount dva0: fwupdate**
\$ **create/dir dva0:[ALPHA1000]**
\$ **copy/contiguous as1000_e4_v5_4.exe dva0:[ALPHA1000]fwupdate.exe**
- b. **MCR Writeboot**
Update VAX portion of boot block (default is Y): **No**
Update Alpha portion of boot block (default is Y): **Yes**
[enter AXP bootfile:] **dva0:[ALPHA1000]fwupdate.exe**
- c. Dismount the disk and shutdown VMS.
\$ **dismount dva0:**
- d. Insert the floppy on the target system and boot it from the >>>.
>>> **boot dva0**
- e. If you wish to update option firmware you must create a second floppy with option firmware on it. Download the following files from the Website.
as1000fw.txt
ccmab022.sys
dfeaa130.sys
dfeab320.sys
dfxaa320.sys
kzpsaal2.sys

- f. Enter the following commands to create the options floppy:


```
$ init/dens=HD/index=begin dva0: optionfw
$ mount dva0: optionfw
$ create/dir dva0:[options] - Note:The directory name must be [options]
$ copy as1000fw.txt dva0:[options]
$ copy ccmab022.sys dva0:[options]
$ copy dfeaa130.sys dva0:[options]
$ copy dfeab320.sys dva0:[options]
$ copy dfxaa320.sys dva0:[options]
$ copy kzpsaa12.sys dva0:[options]
$ dismount dva0:
```
- g. Insert the floppy when it asks for the options firmware and enter the location.

Tru64 UNIX

- a. Go to the Digital Internet firmware site at <http://ftp.digital.com/pub/Digital/Alpha/firmware/>
 - b. Copy the firmware.exe file from the Alpha1000 or Alpha1000A directory to your system and rename it fwupdate.exe
 - c. Download the file mkbootfirm.tar from the firmware website. <ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/mkbootfirm.tar>

You can untar mkbootfirm on your target Tru64 UNIX system with the command:
tar xvf mkbootfirm.tar
 - d. Make sure you have a floppy that has been low-level formatted.
For example, to low-level format a floppy in drive 0:
fddisk -fmt /dev/rfd0a
 - e. Change default to directory with mkbootfirm.exe
cd mkbootfirm
 - f. Run mkbootfirm on the .exe firmware image that you downloaded. mkbootfirm uses a .exe firmware image to create a file that can be dd'd to floppy. The following will create a bootable floppy from a downloaded .exe firmware image:
./mkbootfirm fwupdate.exe | dd of=/dev/rfd0c bs=64k
- NOTE:** Assumes mkbootfirm.exe is in current directory and floppy is in drive 0.
- g. Insert the floppy on the target system and boot it from the SRM console:
>>> boot dva0
 - h. If you wish to update option firmware you must create a second floppy with option firmware on it. Go to the firmware website and follow this procedure.
 - i. Download the file v39_options.dd. This file name changes with different console versions.
 - j. Make sure you have a floppy that has been low-level formatted.
For example, to low-level format a floppy in drive 0:
fddisk -fmt /dev/rfd0a
 - k. Enter the command:
dd if=v39_options.dd of=/dev/rfd0c bs=64k
- NOTE:** This assumes the v39_options.dd image file is in the current directory and that the floppy is in drive 0.
- l. After booting the firmware floppy created with mkbootfirm, the update utility will complain that it cannot find the options files on either CD or floppy, and will prompt for a device to look for the options files. Simply insert the options floppy you created above, type the device name of the floppy (e.g. dva0) and hit <return> to load the options firmware.

Windows NT

- a. Copy the firmware file to a FAT formatted floppy with the update image filename a:\fwupdate.exe.
- b. Shut down NT and from the NT Console menu, select "Install new firmware".
- c. If you wish to update the options firmware, you must create a second floppy. Download the following files from the options directory at the firmware website.

```
as1000fw.txt
ccmab022.sys
dfeaa130.sys
dfeab320.sys
dfxaa320.sys
kzpsaal2.sys
```

- d. FAT format a floppy and copy the files to the floppy.
- e. When the utility asks for the options floppy, insert it and tell the utility The device it is located on.

Method 6 - BOOTP Network Upgrade - Tru64 UNIX

- a. Mount the Firmware Update CD using the following command:
`# mount -rt cdfs -o noversion /dev/rz4c /mnt`
- b. Modify or Create the Client Database in the /etc/bootptab File
`<host>:ht:<hw_type>:ha=<hw_addr>:bf=<filename>:ip=<ip_addr>`

where:

host is the system name in /etc/hosts

hw_type is the hardware type. Proteon is ht = 4.

Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.

hw_addr is the hardware address: use the console command show device.

filename is the name of the default bootfile image:

ip_addr is the Internet protocol address of the system name in /etc/hosts.

The following is an example of a bootptab file for both the AlphaServer 1000 and 1000A EV4 and EV5 machines:

```
bigsox:ht=1:ha=08002b236423:bf=/mnt/ALPHA1000/as1000_e4_v5_4.exe;1:ip=16.182.0.87
bigsox:ht=1:ha=08002b236423:bf=/mnt/ALPHA1000/as1000_e5_v5_4.exe;1:ip=16.182.0.87
bigsox:ht=1:ha=08002b236423:bf=/mnt/ALPHA1000A/as1000a_e4_v5_7.exe;1:ip=16.182.0.7
bigsox:ht=1:ha=08002b236423:bf=/mnt/ALPHA1000A/as1000a_e5_v5_7.exe;1:ip=16.182.0.7
```

- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:

```
tftp    dgram udp wait root    /usr/sbin/tftpd    tftpd /mnt
bootps  dgram upd wait root    /usr/sbin/bootpd   bootpd
```

- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**
`# ps aux | grep ine`
`# kill process# <ine process number>`
- e. Restart the inetd daemon:
`# /usr/sbin/inetd`

Note

The bootpd and tftp daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

Use Man bootpd and man tftpd

f. Enter the following command to boot from the BOOTP server:

```
>>> boot -p bootp ewa0
```

Should a boot file "pathname" need to be specified in must be in quotes

```
>>> boot -p bootp ewa0 -file "/dir1/dir2/filename"
```

g. Currently there is no BOOTP support for updating option firmware.

5. From the UPD> prompt save contents of NVRAM to floppy using **SAVE_NVRAM**.

6. List the current firmware version.

```
UPD> list
```

Device	Current Revision	Filename	Update Revision
ARC	v4.56	arc_fw	v4.58
SRM	v5.2-101	srn_fw	v5.4-101
		ccmab_fw	22.0
		dfeaa_fw	1.3
		dfeab_fw	3.20
		dfxaa_fw	3.20
		kzpsa_fw	A12

7. Update the firmware from the UPD> prompt

```
UPD> update
```

Confirm update on:

ARC

SRM

[Y/(N)]y

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

ARC Updating to v4.58... Verifying v4.58... PASSED.

SRM Updating to v5.4-101... Verifying v5.4-101... PASSED.

UPD>

8. Verify that update was successful and exit

```
UPD> verify
```

ARC Verifying v4.58... PASSED.

SRM Verifying v5.4-101... PASSED.

```
UPD> exit
```

Initializing....

9. Power cycle the machine to load console firmware. Reboot firmware CD and execute a **RESTORE_NVRAM** if you saved it in step 5. If you are updating device firmware, proceed to step 10. If you are done reset any environmental variables that changed, init and reboot.

10. Update the option firmware. The options supported for update in the V5.9 CD firmware versions are the PCI FDDI option - DEFPA, the PCI SCSI option -KZPSA, the PCI Memory Channel option, and the EISA FDDI options - DEFPA and DEFEB.

```
UPD> list
```

Device	Current Revision	Filename	Update Revision
ARC	4.49	arc_fw	4.58
SRM	v4.7-163	srn_fw	v5.4-101
		ccmab_fw	22.0
		dfeaa_fw	1.3
		dfeab_fw	3.20
fwb0	2.46	dfxaa_fw	3.20
		kzpsa_fw	A12

```
UPD> update * or update
```

Will update all LFU supported devices found in this system

```
UPD> update option-name or update pka0 - will update device PKA0
Confirm update on:
pka0
[Y/(N)] Y
```

WARNING: updates may take several minutes to complete for
each device.

DO NOT ABORT!

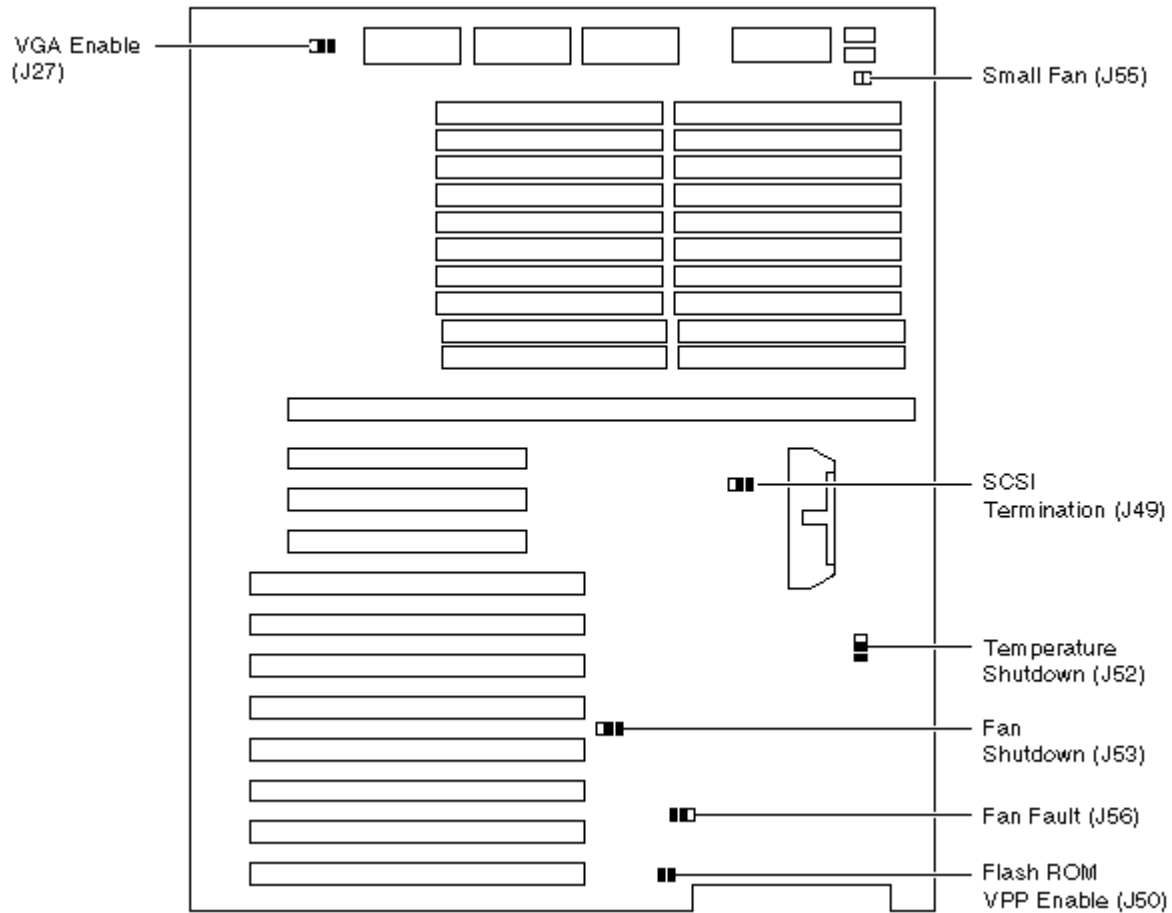
```
pka0          Updating to A12...  Verifying A12...  PASSED.
```

```
UPD> verify
fwb0          Verifying 3.20...  PASSED.
pka0          Verifying A12...  PASSED.
```

11. Power cycle the machine to load console firmware then reset any environmental variables that changed, init and reboot.

AlphaServer 1000/1000A Jumpers

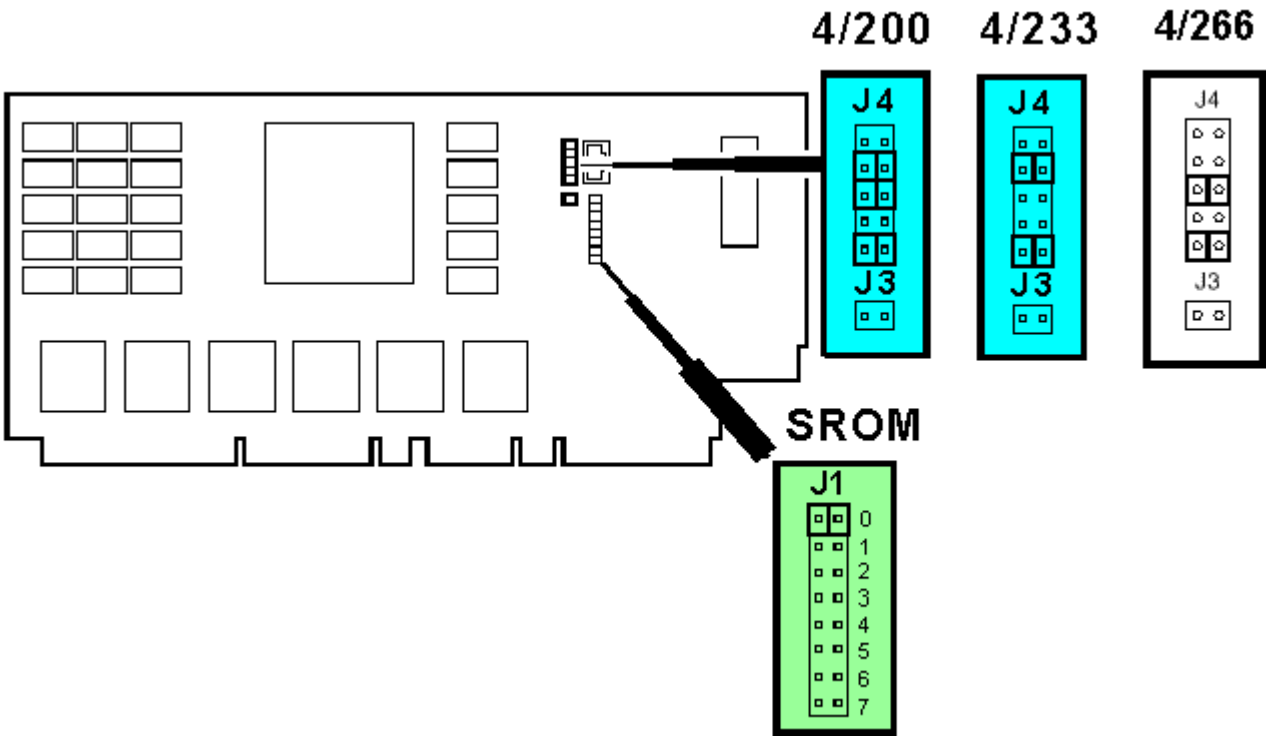
Motherboard



Jumper	Name	Description	Default Setting
J27	VGA Enable	When Enabled (as shown in above diagram), the on-board VGA logic is activated	Enabled for on-board VGA; Disabled if an EISA- or PCI- based VGA is installed.
J49	SCSI Termination	Allows the internal SCSI Terminator to be disabled	Enabled (as shown in diagram)
J50	Flash ROM VPP Enable	Permits the 12V voltage needed to update the Flash ROMs.	Jumper Installed
J52	Temperature Shutdown	Allows for over Temp Shutdown	Currently ships as Enabled. (as shown in diagram)
J53	Fan Shutdown	Allows the software to shut down the system if a fan fails.	Enabled (as shown in diagram)
J55	Small Fan	Allows the small fan to be disabled to accommodate the wide-tower enclosure. On RackMount Systems, this jumper is in to disable fan-2 fault.	This jumper is NOT installed on Alphaserwer 1000 systems.
J56	Fan Fault	When enabled, the hardware forces the system to shutdown if a fan fails. When disabled, the firmware generates a machine check; the system crashes and shuts down if a fan fails.	Enabled (as shown in diagram)

EV4 CPU

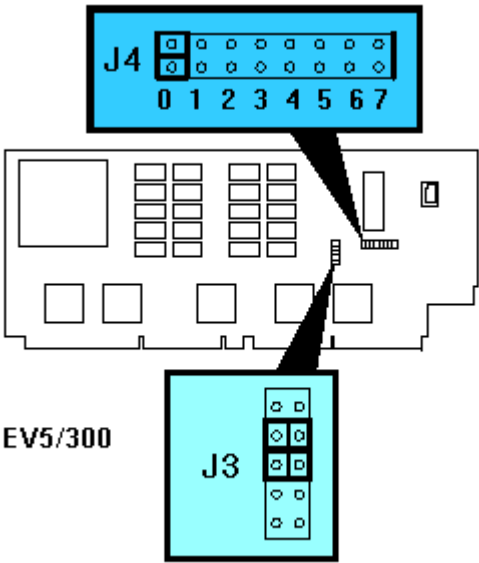
J4, J3 and J1 Settings



Jumper	4/200	4/233	4/266
J4	OFF	OFF	OFF
	ON	ON	OFF
	ON	OFF	ON
	OFF	OFF	OFF
	ON	ON	ON
J3	This jumper is never installed on any EV4 CPU		

J1	Setting
0	Standard Boot Setting (default)
1	Mini-Console (Internal Use Only)
2	SROM Cache Test: BCache test
3	SROM BCache Test: BCache and MEM Test
4	SROM Memtest: Mem test with BCache and DCache Disabled
5	SROM Memtest Cache On: Mem test with BCache and DCache Enabled
6	SROM BCache Tag Test: Backup Cache Tag Test
7	Fail-Safe Loader setting: Selects fail-safe loader firmware

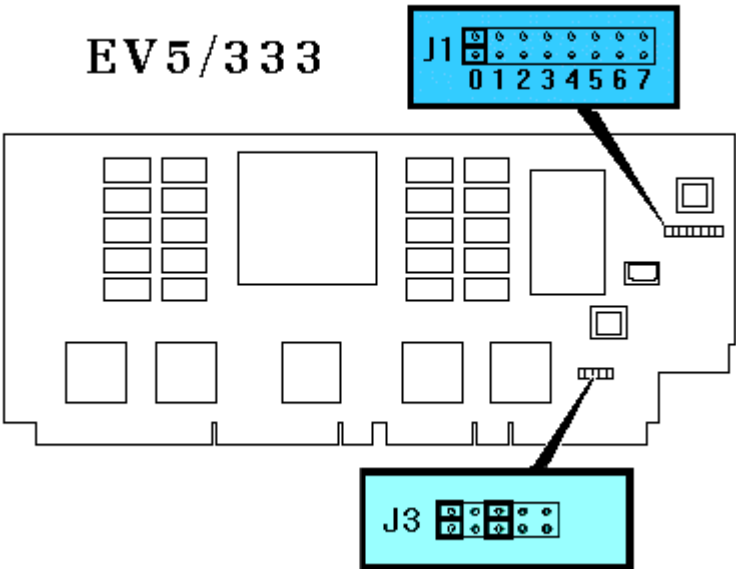
J3 and J4 Settings



J4	Setting
0	Standard Boot Setting (AlphaServer 1000/1000A systems) Jumper can be in either 0 or 1. Default is in 0.
1	
2	Mini-console setting: Internal use only
3	Mini-console setting: Internal use only
4	Power up with no BCache: Power up with BCache disabled allows the system to run despite bad BCache until a replacement daughter board is available
5	Mini-console setting: Internal use only
6	Mini-console setting: Internal use only
7	Fail-Safe Loader setting: Selects fail-safe loader firmware

J3 setting	OFF	ON	ON	OFF	OFF
------------	-----	----	----	-----	-----

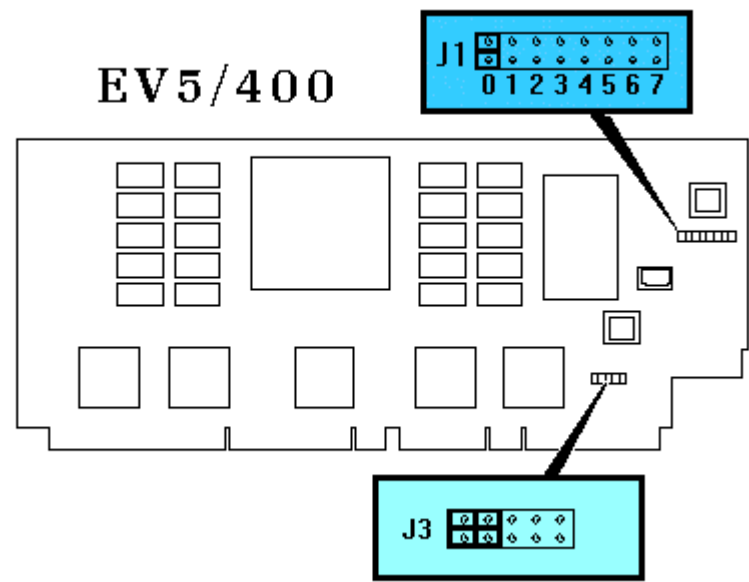
J1 and J3 Settings



J1	Setting
0	Standard Boot Setting (AlphaServer 1000/1000A systems) Jumper can be in either 0 or 1. Default is in 0.
1	
2	Mini-console setting: Internal use only
3	Mini-console setting: Internal use only
4	Power up with no BCache: Power up with BCache disabled allows the system to run despite bad BCache until a replacement daughter board is available
5	Mini-console setting: Internal use only
6	Mini-console setting: Internal use only
7	Fail-Safe Loader setting: Selects fail-safe loader firmware

J3 setting	ON	OFF	ON	OFF	OFF
------------	----	-----	----	-----	-----

J1 and J3 Settings



J1	Setting
0	Standard Boot Setting (AlphaServer 1000/1000A systems) Jumper can be in either 0 or 1.
1	Default is in 0.
2	Mini-console setting: Internal use only
3	Mini-console setting: Internal use only
4	Power up with no BCache: Power up with BCache disabled allows the system to run despite bad BCache until a replacement daughter board is available
5	Mini-console setting: Internal use only
6	Mini-console setting: Internal use only
7	Fail-Safe Loader setting: Selects fail-safe loader firmware

J3 setting	ON	ON	OFF	OFF	OFF
------------	----	----	-----	-----	-----

AlphaServer 1200 or Digital Server 5000 Models 5300/5305 or Digital Ultimate WorkStation

The console firmware on the AlphaServer 1200 system is located on the system motherboard in two FEPROMs. Whenever the motherboard is replaced, the firmware will most likely need to be upgraded. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available. This system also contains a failsafe loader. However on this machine the failsafe loader is not jumper selectable. When the SROM detects a checksum error in the firmware image it is supposed to load, it will request you to load a failsafe loader floppy to enable you to reflash the FEPROMs.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off the CDROM, firmware floppy or over the network using LFU command.
- Off of an infoservert using the Alpha AXP System Firmware Update Utility CD.
- Over the network using the .SYS firmware file.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- Off of a bootable floppy OpenVMS, Unix or NT.
- From the BOOTP server (Unix).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision.
- Record all console environmental variables by typing SHOW * at the >>>.
- Determine method and firmware version that will be used to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Locate the appropriate RCU and ECU diskettes if required.
- Boot the firmware file (LFU).
- Use the list, update and verify commands at the UPD> prompt.
- When done exit from LFU.
- Init the machine and reboot.
- Run ECU and RCU as required.

1. Get the current firmware revision at power on or with console show or init commands. It is at the very bottom of the configuration map.

```
Initializing...
  SROM V1.1 on cpu0
  SROM V1.1 on cpu1
XSROM V5.0 on cpu0
XSROM V5.0 on cpu1
BCache testing complete on cpu0
BCache testing complete on cpu1
mem_pair0 - 64 MB
mem_pair1 - 64 MB
mem_pair2 - 64 MB
mem_pair3 - 64 MB
20..20..21..21..23..
please wait 6 seconds for T24 to complete
24..24..
Memory testing complete on cpu0
Memory testing complete on cpu1
starting console on CPU 0
sizing memory
  0      64 MB DIMM
  1      64 MB DIMM
  2      64 MB DIMM
  3      64 MB DIMM
```

```

starting console on CPU 1
probing IOD1 hose 1
  bus 0 slot 1 - NCR 53C810
  bus 0 slot 4 - PCI-PCI Bridge
    probing PCI-PCI Bridge, bus 2
      bus 2 slot 0 - QLogic ISP1020
probing IOD0 hose 0
  bus 0 slot 1 - PCEB
    probing EISA Bridge, bus 1
  bus 0 slot 2 - S3 Trio64/Trio32
  bus 0 slot 3 - DECchip 21140-AA
configuring I/O adapters...
  ncr0, hose 1, bus 0, slot 1
  isp0, hose 1, bus 2, slot 0
  floppy0, hose 0, bus 1, slot 0
  tulip0, hose 0, bus 0, slot 3
System temperature is 27 degrees C
AlphaServer 1200 Console V5.0-2, 17-SEP-1997 17:14:15

```

```

P00>>>sho version
version                V5.0-2, 17-SEP-1997 17:14:15

```

```

P00>>>sho pal
pal                    OpenVMS PALcode V1.19-12, Digital UNIX PALcode V1.21-20

```

```

P00>>>sho config

```

```

                Digital Equipment Corporation
                AlphaServer 1200

```

```

Console V5.0-2  OpenVMS PALcode V1.19-12, Digital UNIX PALcode V1.21-20

```

Module	Type	Rev	Name
System Motherboard	0	0000	mthrbrd0
Memory 64 MB DIMM	0	0000	mem0
Memory 64 MB DIMM	0	0000	mem1
Memory 64 MB DIMM	0	0000	mem2
Memory 64 MB DIMM	0	0000	mem3
CPU (4MB Cache)	3	0000	cpu0
CPU (4MB Cache)	3	0000	cpu1
Bridge (IOD0/IOD1)	600	0032	iod0/iod1
PCI Motherboard	a	0003	saddle0

Bus 0	iod0 (PCI0)	Type	Rev	Name
Slot	Option Name	Type	Rev	Name
1	PCEB	4828086	0004	pceb0
2	S3 Trio64/Trio32	88115333	0054	vga0
3	DECchip 21140-AA	91011	0020	tulip0

Bus 1	pceb0 (EISA Bridge connected to iod0, slot 1)	Type	Rev	Name
Slot	Option Name	Type	Rev	Name

Bus 0	iod1 (PCI1)	Type	Rev	Name
Slot	Option Name	Type	Rev	Name
1	NCR 53C810	11000	0002	ncr0
4	PCI-PCI Bridge	11011	0002	pcb0

Bus 2	pcb0 (PCI-PCI Bridge connected to iod1, slot 4)	Type	Rev	Name
Slot	Option Name	Type	Rev	Name
0	QLogic ISP1020	10201077	0002	isp0

2. P00>>> **show *** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.

```

    Bootdef_dev
    Boot_osflags
    Auto_action

```

3. Boot the firmware using one of the following methods.

Method 1 - Load the Console Firmware Off a Local CDROM

SRM Console

- a. Insert the CD in the local CDROM.
- b. P00>>> **boot DKA500** - You can also use the procedure c.
BOOTFILE: [**as1200**]**as1200_v6_0.exe** - for the AlphaServer 1200

Note: These filenames will change with different console versions.

Apu-> See step 5 below for update procedure.

- c. P00>>> **lfu**

***** Loadable Firmware Update Utility *****

Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: **cda0**

Please enter the name of the firmware files list, or
Press <return> to use the default filename
[AS1200IO, (AS1200CP)]: **as1200fw**

Copying AS1200FW from DKA500.5.0.1.1 .
Copying [as1200]TCREADME from DKA500.5.0.1.1 .
Copying [as1200]TCSRMR0M from DKA500.5.0.1.1
Copying [as1200]TCARCROM from DKA500.5.0.1.1
Copying [options]CCMAB022 from DKA500.5.0.1.1 .
Copying [options]CIPCA420 from DKA500.5.0.1.1 .
Copying [options]DFXAA320 from DKA500.5.0.1.1 ...
Copying [options]KZPSAA12 from DKA500.5.0.1.1 ...

UPD> See below for update steps

AlphaBIOS Console

- a. Insert the CD in the local CDROM.
- b. Enter the AlphaBIOS menu by typing **ARC** or **AlphaBIOS** or initializing the system when os_type = nt
- c. AlphaBIOS -Select **F2** to go into Setup then select **Upgrade AlphaBIOS**

Method 2 - Boot Console CD, Firmware Floppy or Network Device

CD

- a. Insert the CD in the local CDROM.
- b. Execute LFU command and select device cda0 for the CDROM and specify as1200fw.

P00>>> **lfu**

***** Loadable Firmware Update Utility *****

Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: **cda0**
Please enter the name of the firmware files list, or
Press <return> to use the default filename
[AS1200IO, (AS1200CP)]: **as1200fw**

Floppy

- a. Create a system and/or I/O firmware floppies using the following procedure. You will need up three floppies. Two for system firmware and one for I/O firmware. This is as of V5.4 . With V5.3 or earlier two floppies would work.
- b. Execute the following command file to create both floppies

```
$!  
$! make_tcods2cp_1and2.com  
$!  
$ inquire ignore "Insert first blank HD floppy in DVA0, then continue"  
$ set verify  
$ set proc/priv=all  
$ init/density=hd/index=begin dva0: tcods2cp1  
$ mount dva0: tcods2cp1  
$ create/directory dva0:[as1200]  
$ copy as1200fw.sys dva0:[as1200]as1200fw.sys  
$ copy as1200cp.sys dva0:[as1200]as1200cp.sys  
$ copy tcreadme.sys dva0:[as1200]tcreadme.sys  
$ copy tcarcrom.sys dva0:[as1200]tcarcrom.sys  
$ dismount dva0:  
$ set noverify  
$ inquire ignore "Insert second blank HD floppy in DVA0, then continue"  
$ set verify  
$ set proc/priv=all  
$ init /density=hd/index=begin dva0: tcods2cp2  
$ mount dva0: tcods2cp2  
$ create/directory dva0:[as1200]  
$ copy tcsrcrmrom.sys dva0:[as1200]tcsrcrmrom.sys  
$ dismount dva0:  
$ set noverify  
$ exit
```

If creating a diskette for updating your I/O option firmware only:

```
$!  
$! make_tcods2io.com  
$!  
$ inquire ignore  
$ "Insert blank HD floppy in DVA0, then continue"  
$ set verify  
$ set proc/priv=all  
$ init/density=hd/index=begin dva0: tcods2io  
$ mount dva0: tcods2io  
$ create/directory dva0:[as1200]  
$ create/directory dva0:[options]  
$ copy as1200fw.sys dva0:[as1200]as1200fw.sys  
$ copy as1200io.sys dva0:[as1200]as1200io.sys  
$ copy tcreadme.sys dva0:[as1200]tcreadme.sys  
$ copy ccmab022.sys dva0:[options]ccmab022.sys  
$ copy cipca420.sys dva0:[options]cipca420.sys  
$ copy dfpaa320.sys dva0:[options]dfpaa320.sys  
$ copy kzpsaa12.sys dva0:[options]kzpsaa12.sys  
$ dismount dva0:  
$ set noverify  
$ exit
```

- c. Shutdown the OS and init the machine at the P00>>> prompt.

- d. Execute LFU command and select device dva0 for the floppy device and the filenames asl200cp or asl200io depending if you want to update console or I/O firmware. If running console version V1.2 or greater you can specify asl200fw and it will load files off the console firmware floppy and then request you load the I/O firmware floppy.

```
P00>>> lfu
***** Loadable Firmware Update Utility *****

Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: dva0

Please enter the name of the firmware files list, or
Press <return> to use the default filename
[AS1200IO,(AS1200CP)]: asl200cp
```

Network

- a. Copy the following files to MOM\$LOAD of you local MOP server.
asl200cp.sys
asl200fw.sys
asl200io.sys
ccmab022.sys
cipca420.sys
dfpaa320.sys
kzpsaa12.sys
tcreadme.sys
tcsrmmrom.sys
tcarcrom.sys
tcreadme.sys
- b. Set the attributes for each file using the following OpenVMS command.

\$ set file/attr=rfm:fix,lrl:512,mrs:512,rat:none filename.sys
- c. Execute LFU command and select device EWA0 fir Digital PCI Ethernet or FWA0 for Digital PCI FDDI (DEFPA). Specify the files asl200fw, asl200cp or asl200io depending on what you want to update.

```
P00>>> lfu
***** Loadable Firmware Update Utility *****

Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: ewa0

Please enter the name of the firmware files list, or
Press <return> to use the default filename
[AS1200IO,(AS1200CP)]: asl200fw
```

Method 3 - Boot the Console CD Off of an Infoserver

- a. Insert CD in the Infoserver
- b. P00>>> **boot exa0 -file asl200_v6_0** (leave off the .sys extension)

Method 4 - Booting Off the Network

- a. Copy firmware to MOM\$LOAD of an existing node in the cluster
- b. Set the attributes on the file with the following commands:
\$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) asl200_v6_0.sys

```

c. Enable service on that node from NCP
  $ MC NCP
  MC NCP> Show Known Circuit Characteristic
  Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

  Circuit = BNA-0
  State = on
  Service = disabled (if enabled skip to boot command)
  Counter timer = 65534
  Designated router = 28.1023 (CXO28A)
  Cost = 4
  Maximum routers allowed = 33
  Router priority = 64
  Hello timer = 15
  Type = Ethernet
  Adjacent node = 28.1023 (CXO28A)
  Listen timer = 30

  NCP> Set Circ BNA-0 State OFF - This step will stop network activity
  NCP> Set Circ BNA-0 Service Enable
  NCP> Set Circ BNA-0 State ON

d. P00>>> b -fl 0,0 EWA0 -fi asl200_v6_0
  (Leave off .SYS or node that services request will get error - BAD MOP FID)

  Determine device name with SHOW DEVICE at >>> .
  DE4x0/DE500 = EWA0
  FDDI = FWA0

```

Method 5 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

Non-System Disk

- a. Locate the asl200_v6_0.exe file
- b. Set the attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:


```

$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) asl200_v6_0.exe
$ copy/contiguous asl200_v6_0.exe "non_system_disk":[directory]

```
- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

\$ MCR Writeboot

```

Update VAX portion of boot block (default is Y): No
Update Alpha portion of boot block (default is Y): Yes
Target system device (and boot file if not VMB.EXE): $1$dua5:[TEMP]asl200_v6_0.exe

```

- d. P00>>> b -fl 0,0 dua5

System Disk

- a. Only steps a and b above are used. Do **NOT** execute writeboot step c.
- b. Specify the flags of 0,a0 a0 and use "system disk":[sys0.sysexex]filename for bootfile.


```

>>> b -fl 0,a0 dua0
bootfile: dua0:[sys0.sysexex]asl200_v6_0.exe

```

Method 6 - Boot Off of a Bootable Floppy - V5.2 Firmware or Earlier

OpenVMS AXP

- a. Init and mount to floppy. Create a directory and copy the firmware to the Floppy with the following commands.
\$ **init/dens=HD/index=begin dva0: fwupdate**
\$ **mount dva0: fwupdate**
\$ **create/dir dva0:[as1200]**
\$ **copy/contiguous as1200_v5_2.exe dva0:[as1200]fwupdate.exe**
- b. MCR Writeboot
Update VAX portion of boot block (default is Y): **No**
Update Alpha portion of boot block (default is Y): **Yes**
[enter AXP bootfile:] **dva0:[as1200]fwupdate.exe**
- c. Dismount the disk and shutdown VMS.
\$ **dismount dva0:**
- d. Insert the floppy on the target system and boot it from the >>>.
>>> **boot dva0**

Tru64 UNIX

- a. Go to the Digital Internet firmware site at
<http://ftp.digital.com/pub/Digital/Alpha/firmware/>
- b. Copy the firmware.exe file from the As1200 directory to your system and rename it fwupdate.exe
- c. Download the file mkbootfirm.tar from the firmware website.
<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/mkbootfirm.tar>

You can untar mkbootfirm on your target Tru64 UNIX system with the command:

```
# tar xvf mkbootfirm.tar
```

- d. Make sure you have a floppy that has been low-level formatted.
For example, to low-level format a floppy in drive 0:
fddisk -fmt /dev/rfd0a
- e. Change default to directory with mkbootfirm.exe
cd mkbootfirm
- f. Run mkbootfirm on the .exe firmware image that you downloaded. mkbootfirm uses a .exe firmware image to create a file that can be dd'd to floppy.

The following will create a bootable floppy from a downloaded .exe firmware image:

```
./mkbootfirm fwupdate.exe | dd of=/dev/rfd0c bs=64k
```

NOTE: Assumes mkbootfirm.exe is in current directory and floppy is in drive 0.

- g. Insert the floppy on the target system and boot it from the SRM console:
P00>>> **boot dva0**

Windows NT

- a. Copy the firmware file to a FAT formatted floppy with the update image filename of a:\fwupdate.exe.
- b. Shut down NT and from the NT Console menu, select "Install new firmware".

Method 7 - Boot Off of a Bootable Floppy - V5.3 Firmware or Later

Windows NT

- a. Fat format up to three floppies. To update system firmware you will need two floppies. However if you want to update IO firmware, you will need three floppies. A disk1.zip, disk2.zip and disk3.zip file are available on the firmware website.
- b. Locate and copy the following files to disk #1.
 - asl200cp.sys Two-Disk LFU file list
 - asl200fw.sys Three-Disk LFU file list
 - tcreadme.sys LFU text file
 - tcarcrom.sys AlphaBios/ARC firmware
- c. Locate and copy the following files to disk #2 to update SRM firmware:
 - tcsrmrom.sys SRM console firmware
- d. Locate and copy the following files to disk #3 to update I/O firmware.
 - asl200.sys IO LFU update file
 - tcreadme.sys LFU text file
 - cipca315.sys CIPCA firmware
 - dfxaa320.sys DFXAA firmware
 - kzpsaal2.sys KZPSA firmware
 - ccmab022.sys CCMAB firmware
- e. At the >>> type LFU and enter when it asks for the filename enter asl200cp (cpu firmware), asl200io (IO firmware) or asl200fw (system and IO firmware).
- f. I will prompt you to load the floppies in one at a time. When it has read all three floppies you will come to a UPD? prompt where you can update firmware.

Note When Using Three Disks: After updating console firmware with disk1 and disk2, you can update I/O firmware from disk3 by re-invoking the LFU via LFU command at the UPD> prompt. When prompted for input, provide the alternate firmware files list filename.

Method 8 - BOOTP Network Upgrade - Tru64 UNIX

- a. Mount the Firmware Update CD using the following command:
mount -rt cdfs -o noversion /dev/rz4c /mnt
- b. Modify or Create the Client Database in the /etc/bootptab File
<host>:ht:<hw_type>:ha=<hw_addr>:bf=<filename>:ip=<ip_addr>

where:
host is the system name in /etc/hosts

hw_type is the hardware type. Proteon is ht = 4.
Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.

hw_addr is the hardware address: use the console command show device.

filename is the name of the default bootfile image:

ip_addr is the Internet protocol address of the system name in /etc/hosts.

The following is an example of a bootptab file for the AlphaServer 1200:
bigsox:ht=1:ha=08002b236423:bf=/mnt/asl200/asl200_v6_0.exe;1:ip=16.182.0.87

- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:
- ```
tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt
bootps dgram udp wait root /usr/sbin/bootpd bootpd
```
- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**
- ```
# ps aux | grep ine
# kill process# <ine process number>
```
- e. Restart the inetd daemon:

```
# /usr/sbin/inetd
```

Note

The bootpd and tftp daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

Use Man bootpd and man tftpd

- f. Enter the following command to boot from the BOOTP server:
- ```
>>> boot -p bootp ewa0
Should a boot file "pathname" need to be specified in must be in quotes

>>> boot -p bootp ewa0 -file "/dir1/dir2/filename"
```

4. List the current version then Update the firmware at the UPD> prompt. Use **update \*** or **update \*SRM\***, or **update al\*** or **update kzpsa0 etc.** Then verify the update before exiting.

Starting Firmware Update Utility

Unpacking firmware files

```
asl200_readme adr = 1000020 len = a00(2560)
readme adr = 1000c40 len = a00(2560)
srmrom adr = 1001860 len = f2200(991744)
arcrom adr = 10f3c80 len = 70000(458752)
ccmab_fw adr = 11924a0 len = 80200 (524800)
cipca_fw adr = 1163ea0 len = ce00(52736)
dfxaa_fw adr = 12e3820 len = 38a00(231936)
kzpsa_fw adr = 131c440 len = 74000(475136)
```

\*\*\*\*\* Loadable Firmware Update Utility \*\*\*\*\*

| Function  | Description                                                     |
|-----------|-----------------------------------------------------------------|
| Display   | Displays the system's configuration table.                      |
| Exit      | Done exit LFU (reset).                                          |
| List      | Lists the device, revision, firmware name, and update revision. |
| Lfu       | Restarts LFU.                                                   |
| Readme    | Lists important release information.                            |
| Update    | Replaces current firmware with loadable data image.             |
| Verify    | Compares loadable and hardware images.                          |
| ? or Help | Scrolls this function table.                                    |

- a. From the >>> or UPD> prompt save contents of NVRAM to floppy using the command **SAVE\_NVRAM**.

b. UPD> **list**

| Device    | Current Revision | Filename | Update Revision |
|-----------|------------------|----------|-----------------|
| AlphaBIOS | V5.70-0          | arcrom   | V5.70-0         |
| srmflash  | V5.8-2           | srmrom   | V5.9-5          |
|           |                  | cipca_fw | A420            |
|           |                  | dfxaa_fw | 3.20            |
|           |                  | kzpsa_fw | A12             |
|           |                  | ccmab_fw | 22.0            |

**NOTE:**

If upgrading to V5.3 or later for the first time, or downgrading from V5.3 or 5.4 to a lower version, make sure you read the release notes. The correct update procedure is as follows.

1. **Boot firmware CD**
2. **Update SRM**
3. **Exit and reboot firmware CD**
4. **Update AlphaBIOS**
5. **Exit**

c. UPD> **update srm\*** - See **NOTE** above.

WARNING: updates may take several minutes to complete for each device.

Confirm update on: srmflash [Y/(N)] **Y**

DO NOT ABORT!

srmflash Updating to V5.9-5... Verifying V5.9-5... PASSED.

d. UPD> **up alp\***

WARNING: updates may take several minutes to complete for each device.

Confirm update on: AlphaBIOS [Y/(N)] **Y**

DO NOT ABORT!

AlphaBIOS Updating to V5.70-0... Verifying V5.70-0... PASSED.

**Or to update all firmware with one command**

e. UPD> **update \*** - Not valid if updating to or downgrading from V5.3. See Note above.

WARNING: updates may take several minutes to complete for each device.

Confirm update on AlphaBIOS [Y/(N)] **Y**

DO NOT ABORT!

AlphaBIOS Updating to V5.70-0... Verifying V5.70-0... PASSED.

Confirm update on srmflash [Y/(N)] **Y**

DO NOT ABORT!

srmflash Updating to V5.9-5... Verifying V5.9-5... PASSED.

f. UPD> **verify**

|           |                      |         |
|-----------|----------------------|---------|
| AlphaBIOS | Verifying V5.70-0... | PASSED. |
| srmflash  | Verifying V5.9-5...  | PASSED. |

g. UPD> **exit**

Initializing...

h. Starting with the V5.3 CD, if running Windows NT, do a **build -e** after



updating firmware.

- i. From the >>> restore the NVRAM contents with **RESTORE\_NVRAM** or reboot the firmware CD and **RESTORE\_NVRAM** if you did the **SAVE\_NVRAM** in step b. Otherwise check and set the following environmental variables.

```
P00>>> set Bootdef_dev
 set Boot_osflags
 set Auto_action
```

- j. P00>>> **init**

5. If ECU is required to be run you must use the AlphaBIOS.

- a. P00>>> **AlphaBIOS**
- b. Select **Run ECU from Floppy**.

6. If RCU is required to be run you must use the AlphaBIOS.

- a. P00>>> **AlphaBIOS**
- b. Select **Run Maintenance Program**
- c. In the Run Maintenance Program dialog box type `\utility\swxcrmgr\swxcrmgr` in the Program Name: field for V3.8 CD or less and `\utility\swxcrmgr\ra200rcu` for the V3.9 CD and later.

7. If the KZPSA Configuration Utility is required to be run you must use the AlphaBIOS.

- a. P00>>> **AlphaBIOS**
- b. Select **Run Maintenance Program**
- c. In the Run Maintenance Program dialog box type **cnfgdiag.exe**

8. You can also set up some controller parameters at the console using the PK\*0 variables. There are different parameters depending on the controller type.

Some you may see are

- **PKA0\_DISCONNECT**
- **PKA0\_FAST**  
Specifies mode of controller  
0 = Normal  
1 = Fast
- **PKA0\_HOST\_ID**  
Specifies SCSI Host ID  
Range is 0-7. 7 is the Default.

- `PKA0_SOFT_TERM`  
Enables or disables SCSI terminators. This environment variable applies to systems using the QLogic ISP1020 SCSI controller. The QLogic ISP1020 SCSI controller implements the 16-bit wide SCSI bus. The QLogic module has two terminators, one for the 8 low bits and one for the high 8 bits. There are five possible values:
  - `off` – Turns off both low 8 bits and high 8 bits.
  - `low` – Turns on low 8 bits and turns off high 8 bits.
  - `high` – Turns on high 8 bits and turns off low 8 bits.
  - `on` – Turns on both low 8 bits and high 8 bits.
  - `diff` – Places the bus in differential mode.
- `PKA0_TERMPWR`  
To change KZPSA SCSI termination power setting, enter the following console command:
  - `0` = disable `termpwr`
  - `1` = enable `termpwr`

## AlphaServer 2000/2100/2100A

The AlphaServer 2100 systems contain flash roms on the standard I/O that contain ARC console firmware for Windows NT and SRM console firmware for Tru64 UNIX and OpenVMS. The 2000 flash roms are on the I/O backplane and the 2100A flash roms are on the backplane module. When ever these modules are replaced or the CPU's are upgraded or downgraded between EV4 and EV5 CPU's the firmware will need to be updated. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available. These machine also have a backup console called the failsafe loader. It is enabled for use or writes by two jumpers on the standard I/O or I/O backplane of the 2100/2000 or two switches on the 2100A backplane. The failsafe loader needs to be updated anytime the standard I/O, I/O backplane or 2100A backplane is replaced or a CPU is upgraded or downgraded. Please note that option firmware is separated from the system firmware. There are extra procedures required to update options when not using the firmware update CD.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off of an infoservert using the Alpha AXP System Firmware Update Utility CD.
- Over the network using the .SYS firmware file.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- Off of a bootable floppy OpenVMS, Unix or NT.
- From the BOOTP server (Unix).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision by the power on display, SHOW commands or from online SDA with a CLUE CONFIG command.
- Record all console environmental variables by typing SHOW \* or SHOW at the >>>.
- Determine method and firmware version that will be used to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Verify the ROM Update Jumpers are in the correct positions.
- Boot the firmware file (LFU).
- Use the list, update and verify commands at the UPD> prompt.
- When done exit from LFU.
- Update the failsafe loader (FSL) if required.
- Power off/on the machine to reload the new firmware.
- Reset and Environmental variables that were changed.
- Update SWXCR firmware by running RCU if required
- Run Eisa Configuration Utility (ECU) as necessary.

The 2x00 and 2100A systems have several scripts available to help with firmware operations. Below is a list and description of the different ones available.

- **read\_rel\_notes** - allows you to read the firmware release notes from UPD> .
- **cpu\_downgrade** - loads an EV4 SRM and ARC image into the flash roms. Use when downgrading from an EV5 CPU to an EV4 CPU. If booting from floppy you need the files sbsrmrom.exe, slsrmrom.exe and sbarcrom.exe.
- **cpu\_upgrade** - loads an EV5 SRM and ARC image into the flash roms. Use when upgrading from an EV4 CPU to an EV5 CPU. If booting from floppy you need the files gmsrmrom.exe, glsrmrom.exe and gmarcrom.exe.
- **make\_dual\_srm** - loads EV5 SRM ROM image into bank 0 and EV4 SRM ROM image into bank\_1 thereby returning a good I/O module to a state where it can be returned as a field spare. If booting from floppy you need the files sbsrmrom.exe and slsrmrom.exe.
- **update\_fsl** - updates the failsafe loader.

1. Get the current firmware revision at power on or with Show commands

```
>>> show version
Version X3.6-83 May 23 1994 09:30:16

>>> show pal
PAL VMS PALcode X5.48-33, OSF PALcode X1.35-23

>>> show config
Console V3.6-83 VMS PALcode X5.48-33, OSF PALcode X1.35-23

Component Status Module ID
CPU 0 P B2020-AA DECchip (tm) 21064-3
CPU 1 P B2020-AA DECchip (tm) 21064-3
Memory 0 P B2021-BA 64 MB
Memory 1 P B2021-BA 64 MB
Memory 2 -
Memory 3 -
IO P B2110-AA
 dva0.0.0.0.1 RX26
Hose 0, PCI
slot 0 DECchip 21040-AA
 ewa0.0.0.0.0 08-00-2B-E1-03-67
slot 1 NCR 53C810
 dka0.0.0.1.0 RZ28
 dka600.6.0.1.0 RRD43
 pka0.7.0.1.0 SCSI Bus ID 7
slot 2 Intel 82375EB
```

2. >>> **Show** or **Show \*** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.  
**Bootdef\_dev**  
**Boot\_osflags**  
**Auto\_action**
3. If updating the failsafe loader (FSL) check that the FSL update jumper/switch is enabled. Consult the Service Manual for its location and setting.
4. Boot the firmware using one of the following six methods.

#### **Method 1 - Load the Console Firmware Off a Local CDROM**

##### **SRM Console**

- a. Insert the CD in the local CDROM.
- b. **boot -fl 0,a0 DKA400** - V3.7 CD or later it will select the correct file  
 BOOTFILE:[alpha2100]as2100\_e4\_v5\_4.exe - AlphaServer 2x00 EV4  
           [alpha2100]as2100\_e5\_v5\_4.exe - AlphaServer 2x00 EV5  
           [alpha2100A]as2100a\_e4\_v5\_4.exe - AlphaServer 2100A EV4  
           [alpha2100A]as2100a\_e5\_v5\_4.exe - AlphaServer 2100A EV5

**Note:** These filenames will change with different console versions.

UPD> See step 5 below for update procedure.

##### **ARC Console**

- a. Insert the CD in the local CDROM.
- b. Enter the ARC menu by typing **ARC** or initializing system if os\_type = NT
- c. Select **Supplementary Menu** and **Install new Firmware**

## Method 2 - Boot the Console CD Off of an Infoserwer

- a. Insert CD in the Infoserwer
- b. >>> **boot ewa0 -file filename** (leave off the .sys extension)

## Method 3 - Booting Off the Network - OpenVMS

- a. Copy the firmware.sys file and the option firmware files to MOM\$LOAD of an existing node in the cluster. (These versions are from the V5.9 CD and may change)

as2x00fw.sys - This file is read first. It tells utility which files to load.  
ccmab022.sys - CCMAB firmware (PCI Memory channel 2 adapter)  
cipca420.sys - CIPCA firmware (PCI-CI module)  
dfeaa130.sys - DEFEA firmware (EISA DEC FDDI controller. Pass 1 module only)  
dfeab320.sys - DEFEA firmware (EISA FDDI controller. All modules after pass 1)  
dfxaa320.sys - DEFEA/DEFEA firmware (PCI or EISA based DEC FDDI controller)  
kzpsaa12.sys - KZPSA firmware (Fast wide differential PCI-SCSI module)

- b. Set the VMS attributes on the file with the following command.  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.sys**

- c. Enable service on that node from NCP

```
$ MC NCP
MC NCP> Show Known Circuit Characteristic
Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

Circuit = BNA-0 - Circuit name will change from system to system

State = on
Service = disabled (if enabled skip to boot command)
Counter timer = 65534
Designated router = 28.1023 (CXO28A)
Cost = 4
Maximum routers allowed = 33
Router priority = 64
Hello timer = 15
Type = Ethernet
Adjacent node = 28.1023 (CXO28A)
Listen timer = 30

NCP> Set Circ BNA-0 State OFF - This step will stop network activity
NCP> Set Circ BNA-0 Service Enable
NCP> Set Circ BNA-0 State ON
```

- d. >>> **b ewa0 -fi filename**  
(Leave off .SYS or node that services request will get an error - **BAD MOP FID**)

## Method 4 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

### **Non-System Disk**

- a. Locate the firmware.exe file
- b. Set the attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.exe**  
\$ **copy/contiguous firmware.exe "non\_system\_disk":[directory]**
- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware file. Take the defaults for the other questions.  
  
\$ **MCR Writeboot**  
Update VAX portion of boot block (default is Y): **No**  
Update Alpha portion of boot block (default is Y): **Yes**

Target system device (and boot file if not VMB.EXE):\$1\$dua5:[TEMP]filename.exe  
d. >>> **b -fl 0,0 dua5**

**Note:** Updating options via this method is only supported if the system disk is on the NCR810 SCSI bus (the on-board SCSI).

- e. To update the option firmware using Method 4 first create an options directory.

```
$ set def dua5:[000000]
$ create/dir [.options]
```

- f. Copy the option firmware files to the options directory.

```
as2x00fw.txt
ccmab022.sys
cipca420.sys
dfeaa130.sys
dfeab320.sys
dfxaa320.sys
kzpsaa12.sys
```

- g. When booting the update utility enter the device name where the option firmware is located.

### System Disk

- a. Only steps a and b above are used. Do **NOT** execute writeboot step c. For the option firmware use the "system disk" as the disk device.
- b. Specify the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for the bootfile.  
>>> **b -fl 0,a0 dua0**  
bootfile: dua0:[sys0.sysexec]as2100\_e4\_v5\_4.exe

### Method 5 - Boot Off of a Bootable Floppy

#### OpenVMS AXP

- a. Init and mount the floppy. Create a directory and copy the firmware to the Floppy with the following commands. The commands shown are for the AlphaServer 2x00 EV4.  
For all other systems use the directory and files listed in method 1.  
\$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) as2100\_e4\_v5\_4.exe  
\$ init/dens=HD/index=begin dva0: fwupdate  
\$ mount dva0: fwupdate  
\$ create/dir dva0:[ALPHA2100]  
\$ copy/contiguous as2100\_e4\_v5\_4.exe dva0:[ALPHA2100]fwupdate.exe
- b. **MCR Writeboot**  
Update VAX portion of boot block (default is Y): **No**  
Update Alpha portion of boot block (default is Y):**Yes**  
[enter AXP bootfile:] **dva0:[ALPHA2100]fwupdate.exe**
- c. Dismount the disk and shutdown VMS.  
\$ **dismount dva0:**
- d. Insert the floppy on the target system and boot it from the >>>.  
>>> **boot dva0**

- e. If you wish to update option firmware you must create a second floppy with option firmware on it. Downline load the following files from the Website.
  - as2x00fw.txt**
  - ccmab022.sys**
  - cipca420.sys**
  - dfeaa130.sys**
  - dfeab320.sys**
  - dfxaa320.sys**
  - kzpsaa12.sys**
- f. Enter the following commands to create the options floppy:
 

```
$ init/dens=HD/index=begin dva0: optionfw
$ mount dva0: optionfw
$ create/dir dva0:[options] - The directory name must be [options]
$ copy as2x00fw.txt dva0:[options]
$ copy ccmab022.sys dva0:[options]
$ copy cipca420.sys dva0:[options]
$ copy dfeaa130.sys dva0:[options]
$ copy dfeab320.sys dva0:[options]
$ copy dfxaa320.sys dva0:[options]
$ copy kzpsaa12.sys dva0:[options]
$ dismount dva0:
```
- g. Insert the floppy when it asks for the options firmware and enter the location.

#### Tru64 UNIX

- a. Go to the Digital Internet  
<http://ftp.digital.com/pub/Digital/Alpha/firmware/>
- b. Copy the firmware.exe file from the Alpha2100 directory to your system and rename it fwupdate.exe
- c. Download the file mkbootfirm.tar from the firmware website.  
<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/mkbootfirm.tar>

You can untar mkbootfirm on your target Tru64 UNIX system with the command:  
**# tar xvf mkbootfirm.tar**

- d. Make sure you have a floppy that has been low-level formatted.  
 For example, to low-level format a floppy in drive 0:  
**fddisk -fmt /dev/rfd0a**
- e. Change default to directory with mkbootfirm.exe  
**cd mkbootfirm**
- f. Run mkbootfirm on the .exe firmware image that you downloaded. mkbootfirm uses a .exe firmware image to create a file that can be dd'd to floppy.

The following will create a bootable floppy from a downloaded .exe firmware image:  
**./mkbootfirm fwupdate.exe | dd of=/dev/rfd0c bs=64k**

**NOTE:** Assumes mkbootfirm.exe is in current directory and floppy is in drive 0.

- g. Insert the floppy on the target system and boot it from the SRM console:  
**>>> boot dva0**
- h. If you wish to update option firmware you must create a second floppy with option firmware on it. Go to the firmware website and follow this procedure.
- i. Download the file v39\_options.dd. This file name changes with different console versions.
- j. Make sure you have a floppy that has been low-level formatted.  
 For example, to low-level format a floppy in drive 0:  
**fddisk -fmt /dev/rfd0a**
- k. Enter the command:

```
dd if=v39_options.dd of=/dev/rfd0c bs=64k
```

**NOTE:** This assumes the v39\_options.dd image file is in the current directory and that the floppy is in drive 0.

1. After booting the firmware floppy created with mkbootfirm, the update utility will complain that it cannot find the options files on either CD or floppy, and will prompt for a device to look for the options files. Simply insert the options floppy you created above, type the device name of the floppy (e.g. dva0) and hit <return> to load the options firmware.

#### Windows NT

- a. Copy the firmware file to a FAT formatted floppy with the update image  
Filename of a:\fwupdate.exe.
- b. Shut down NT and from the NT Console menu, select "Install new firmware".
- c. If you wish to update the options firmware, you must create a second floppy.  
Download the following files from the options directory at the firmware website.  
**as2x00fw.txt**  
**ccmab022.sys**  
**cipca420.sys**  
**dfeaa130.sys**  
**dfeab320.sys**  
**dfxaa320.sys**  
**kzpsaal2.sys**
- d. FAT format a floppy and copy the files to the floppy.
- e. When the utility asks for the options floppy, insert it and tell the utility  
The device it is located on.

#### Method 6 - BOOTP Network Upgrade - Tru64 UNIX

- a. Mount the Firmware Update CD using the following command:  
**# mount -rt cdfs -o noversion /dev/rz4c /mnt**
- b. Modify or Create the Client Database in the /etc/bootptab File  
**<host>:ht:<hw\_type>:ha=<hw\_addr>:bf=<filename>:ip=<ip\_addr>**

where:

**host** is the system name in /etc/hosts

**hw\_type** is the hardware type. Proteon is ht = 4.

Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.

**hw\_addr** is the hardware address: use the console command show device.

**filename** is the name of the default bootfile image:

**ip\_addr** is the Internet protocol address of the system name in /etc/hosts.

The following is an example of a bootptab file for both the AlphaServer 2100 and 2100A EV4 and EV5 machines:

```
bigsox:ht=1:ha=08002b236423:bf=/mnt/ALPHA2100/AS2100_E4_V5_4.EXE;1:ip=16.182.0.87
bigsox:ht=1:ha=08002b236423:bf=/mnt/ALPHA2100/AS2100_E5_V5_4.EXE;1:ip=16.182.0.87
bigsox:ht=1:ha=08002b236423:bf=/mnt/ALPHA2100A/AS2100A_E4_V5_4.EXE;1:ip=16.182.0.7
bigsox:ht=1:ha=08002b236423:bf=/mnt/ALPHA2100A/AS2100A_E5_V5_4.EXE;1:ip=16.182.0.7
```

- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:  
**tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt**  
**bootps dgram udp wait root /usr/sbin/bootpd bootpd**



- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**  
 # **ps aux | grep ine**  
 # **kill process#** <ine process number>
- e. Restart the inetd daemon:  
 # **/usr/sbin/inetd**

**Note**

The bootpd and tftpd daemon will be removed if the system is rebooted.  
 Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

**Use Man bootpd and man tftpd**

- f. Enter the following command to boot from the BOOTP server:  
 >>> **boot -p bootp ewa0**

Should a boot file "pathname" need to be specified in must be in quotes

>>> **boot -p bootp ewa0 -file "/dir1/dir2/filename"**

- g. Currently there is no BOOTP support for updating option firmware.

5. Check the console and option firmware levels.

```
UPD> list
Device Current Revision Filename Update Revision
arcflash 4.36-0 arcrom 4.57-0
pkb0 A07 kzpsa_fw A12
pkc0 A07 kzpsa_fw A12
srmflash 4.2-18 srmrom 5.3-14
 cipca_fw A420
 ccmab_fw 22.0
 dfeaa_fw 1.3
 dfeab_fw 3.20
 dfxaa_fw 3.20

UPD>
```

6. Save contents of NVRAM to a fat formatted floppy from the upd> prompt

```
UPD> SAVE_NVRAM
Save all NVRAM data to file fat:allnvram.sav/dva0.0.0.1000.0.
If file already exists, first copy original to a .bak file.
Please insert a write-UN-locked, FAT formatted floppy...
...and enter "y" to continue.
y
Checking for a FAT formatted floppy...
...Found it.
Checking for existing fat:allnvram.sav/dva0.0.0.1000.0...
...Found one.
Copying fat:allnvram.sav/dva0.0.0.1000.0 to .bak file...
...Succeeded.
Copying all NVRAM to fat:allnvram.sav/dva0.0.0.1000.0...
...Succeeded.
UPD>
```

7. Update the firmware from the UPD> prompt using update or update \*srm\* followed by update \*arc\*

UPD> **update** - to update the SRM,ARC and option firmware

Confirm update on:

fra0

arcflash

srmflash

[Y/(N)] **Y** - Type Yes to proceed with the update

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

srmflash Updating to 5.3-2... Verifying 5.3-2... PASSED.

arcflash Updating to 4.57-0... Verifying 4.57-0... PASSED.

UPD> **update srm\*** - To only update the SRM console

Confirm update on:

srmflash

[Y/(N)] **Y**

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

srmflash            Updating to 5.3-2...    Verifying 5.3-2...    PASSED.

UPD> **update arc\*** - To only update the ARC console

Confirm update on:

arcflash

[Y/(N)] **Y**

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

arcflash    Updating to 4.57-0...    Verifying 4.57-0...    PASSED.

UPD>

8. Verify that update was successful.

UPD> **verify**

arcflash            Verifying 4.57-0...    PASSED.

pkb0                Verifying A12...    PASSED.

srmflash            Verifying 5.3-14...    PASSED.

9. Exit utility and power cycle the machine to load console firmware. If you are updating the failsafe loader firmware, proceed to step 10 or 11.

UPD> **exit**

Do you want to do a manual update? [y/(n)]**n** - if not updating the FSL loader.

Please reset the system.....

10. The failsafe loader can be upgraded from the UPD> or P00>>> prompts. Step 11 will show the use of the script from the P00>>> prompt.

a. Set the failsafe update jumper or switch

b. Boot up LFU using one of the previous steps.

c. At UPD> prompt type fsl\_update

UPD> **update\_fsl**

UPD> **exit**

Do you want to do a manual update? [y/(n)]**n**

d. Now power cycle the system

11. Or to use the FSL\_UPDATE script

a. Boot up LFU using one of the previous steps.

b. At UPD> prompt type exit

UPD> **exit**

Do you want to do a manual update? [y/(n)]**y** - yes to update the failsafe loader.

c. P00>>> **update\_fsl**

d. Now power cycle the system

12. At the >>> execute the **CLEAR\_ARC\_NVRAM** and **CLEAR\_SRM\_NVRAM** commands.

13. Run ECU and do a **SAVE** and **EXIT**. Also reset any console variables.

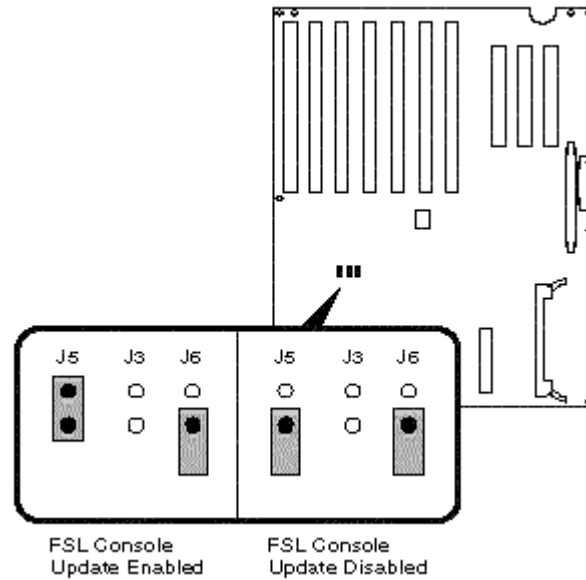
If you executed the **SAVE\_NVRAM** step 8 above you can also use **RESTORE\_NVRAM** command from the UPD> prompt to restore the contents on NVRAM to floppy. See pages 199 and 200 for a description. This will write console variables, NT settings and ECU data to the floppy. Execute this command from LFU before doing the **CLEAR\_ARC\_NVRAM** and **CLEAR\_SRM\_NVRAM** commands.



## AlphaServer 2000/2100/2100A Jumpers

### AlphaServer 2000

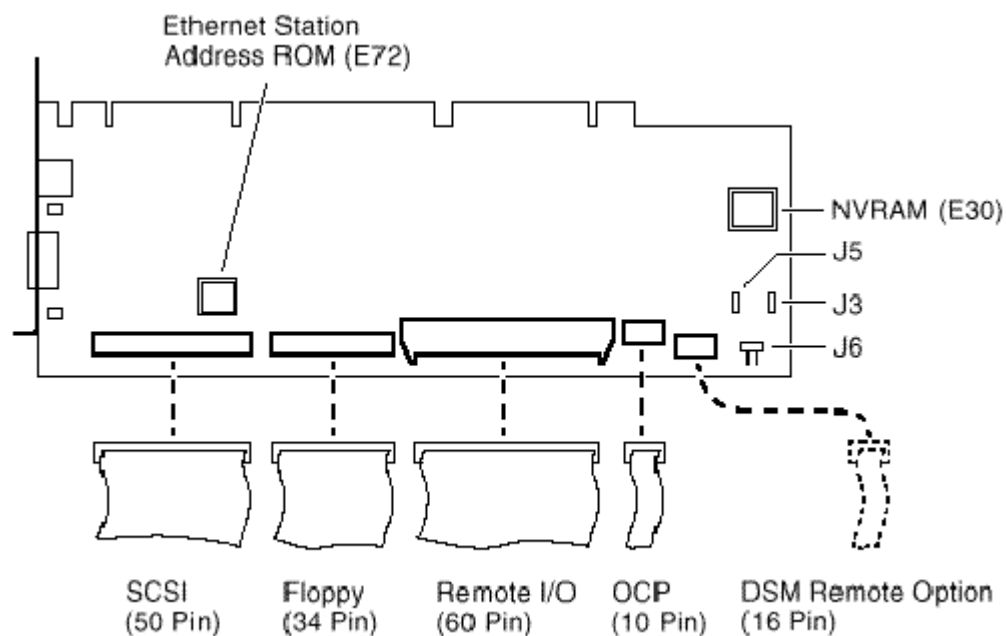
#### BA720 Enclosure



- J3 – Power supply mode: When installed, dual power supplies operate in redundant mode
- J5 – Program voltage: Internal use only. When installed allows to program FSL ROM
- J6 – Fail-Safe: When installed, selects the fail-safe loader firmware

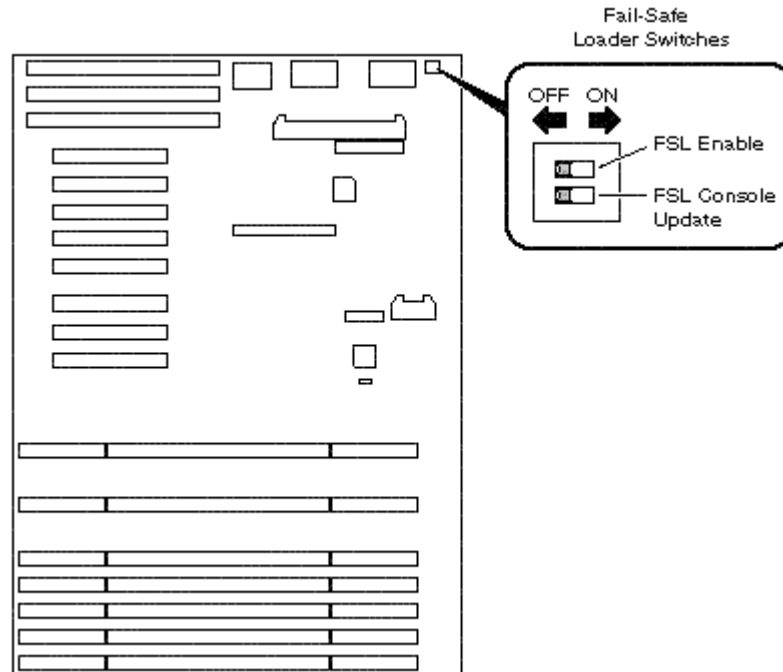
## AlphaServer 2100 and 2100 RM

### BA740/BA741 Enclosures



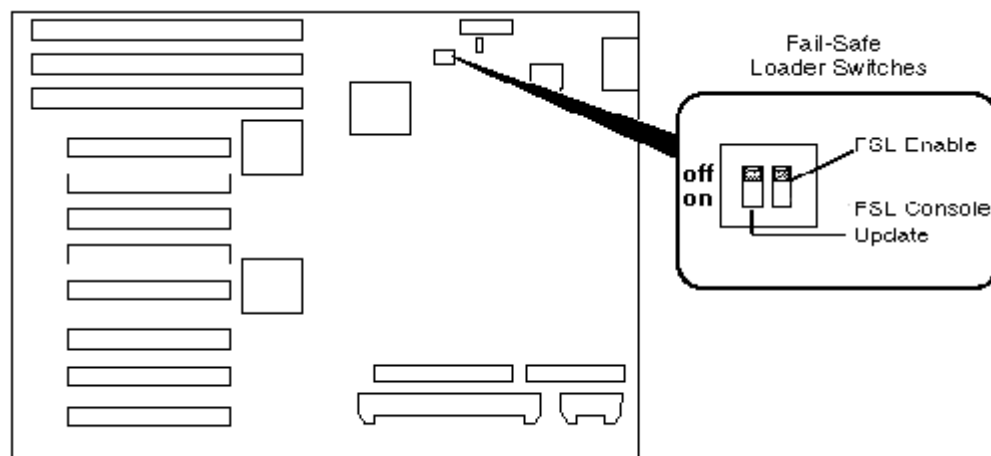
- J3 – Power supply mode: When installed, dual power supplies operate in redundant mode
- J5 – Program voltage: Internal use only. When installed allows to program FSL ROM
- J6 – Fail-Safe: When installed, selects the fail-safe loader firmware

## AlphaServer 2100A

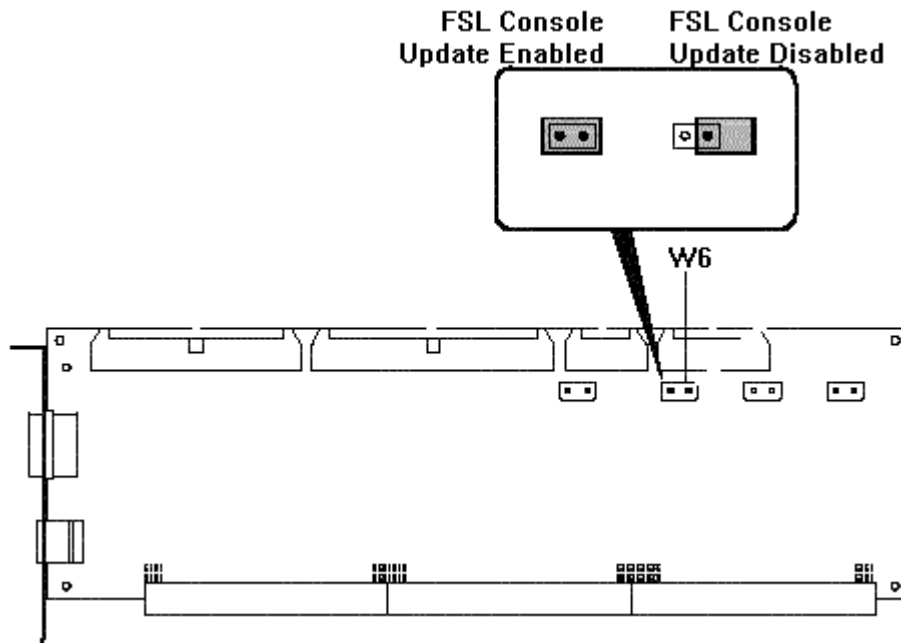


- Top switch to RIGHT – Enable FSL Use
- Bottom switch to RIGHT – Enable writes to FSL ROM

## AlphaServer 2100A RM



- Left switch DOWN – Enable writes to FSL ROM
- Right switch DOWN – Enable FSL Use



**Caution:**  
Do not perform console upgrades with the W6 jumper installed or the system firmware will be corrupted.



## **AlphaServer 4000/4100 or Digital Server 7000 Models 7300/7305**

The console firmware on the AlphaServer 4000/4100 systems is located on the PCI backplane. The ability to write to the ROM is controlled by jumper J18 on the motherboard. Whenever the PCI backplane is replaced, the firmware will most likely need to be upgraded. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available. This system also contains a failsafe loader. However on this machine the failsafe loader is not jumper selectable. It is loaded off of a floppy disk.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off the CDROM, Firmware floppy or over the network using LFU command.
- Off of an infoservert using the Alpha AXP System Firmware Update Utility CD.
- Over the network using the .SYS firmware file.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- Off of a bootable floppy OpenVMS, Unix or NT.
- From the BOOTP server (Unix).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision.
  - Record all console environmental variables by typing SHOW \* at the >>>.
  - Determine method and firmware version that will be used to do the update.
  - Print the firmware release notes for that version and system.
  - Determine if any option firmware will be upgraded.
  - Locate the appropriate RCU and ECU diskettes if required.
  - Boot the firmware file (LFU).
  - Use the list, update and verify commands at the UPD> prompt.
  - When done exit from LFU.
  - Init the machine and reboot.
  - Run ECU and RCU as required.
1. Get the current firmware revision at power on or with console show or init commands. It is at the very bottom of the configuration map.

Power on or init message

```
SROM V1.1 on cpu0
SROM V1.1 on cpu1
XSROM V5.0 on cpu1
XSROM V5.0 on cpu0
BCache testing complete on cpu0
BCache testing complete on cpu1
mem_pair0 - 128 MB
20..20..20..21..21..21..20..21..23..
please wait 3 seconds for T24 to complete
24..24..24..24..
Memory testing complete on cpu0
Memory testing complete on cpu1
starting console on CPU 0
sizing memory
0 128 MB SYNC
starting console on CPU 1
probing IOD1 hose 1
 bus 0 slot 1 - NCR 53C810
 bus 0 slot 2 - PCI-PCI Bridge
 probing PCI-PCI Bridge, bus 2
 bus 2 slot 0 - QLogic ISP1020
 bus 0 slot 3 - DECchip 21040-AA
 bus 0 slot 4 - DECchip 21140-AA
 bus 0 slot 5 - DEC KZPSA
probing IOD0 hose 0
```

```

bus 0 slot 1 - PCEB
 probing EISA Bridge, bus 1
bus 0 slot 2 - DEC PCI MC
bus 0 slot 3 - S3 Trio64/Trio32
bus 0 slot 5 - Mylex DAC960
configuring I/O adapters...
ncr0, hose 1, bus 0, slot 1
isp0, hose 1, bus 2, slot 0
tulip0, hose 1, bus 0, slot 3
tulip1, hose 1, bus 0, slot 4
kzpsa0, hose 1, bus 0, slot 5
floppy0, hose 0, bus 1, slot 0
dac0, hose 0, bus 0, slot 5
mc0, hose 0, bus 0, slot 2
System temperature is 33 degrees C
AlphaServer 4100 Console V5.0-2, 25-SEP-1997 12:42:27

```

P00>>> **show version**

Version X1.0-1 1-APR-1996 13:59:28

P00>>> **show pal**

PAL OpenVMS PALcode X1.17-9, Digital Unix PALcode X1.21-5

P00>>> **AlphaBIOS** - to get version of AlphaBIOS console

2. P00>>> **show \*** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.

```

Bootdef dev
Boot_osflags
Auto_action

```

3. Check that the ROM update jumper is enabled. Consult the Service Manual for its location and setting. It should be enabled by default.
4. Boot the firmware using one of the following methods.

#### **Method 1 - Load the Console Firmware Off a Local CDROM**

##### **SRM Console**

- a. Insert the CD in the local CDROM.

- b. P00>>> **boot DKA500** - You can also use the procedure c.  
 BOOTFILE: **[AS4X00]as4x00\_v6\_0.exe** - for the AlphaServer 4x00

**Note:** These filenames will change with different console versions.

Apu-> See step 5 below for update procedure.

- c. P00>>> **lfu**

\*\*\*\*\* Loadable Firmware Update Utility \*\*\*\*\*

Select firmware load device (cda0, dva0, ewa0), or  
 Press <return> to bypass loading and proceed to LFU: **cda0**

Please enter the name of the firmware files list, or  
 Press <return> to use the default filename  
**[AS4X00IO,(AS4X00CP)]: as4x00fw**

```

Copying AS4X00FW from DKA500.5.0.1.1 .
Copying RHREADME from DKA500.5.0.1.1 .
Copying RHSRMROM from DKA500.5.0.1.1 .
Copying RHARCROM from DKA500.5.0.1.1 .
Copying CCMAB022 from DKA500.5.0.1.1 .
Copying CIPCA420 from DKA500.5.0.1.1 .
Copying DFPAA320 from DKA500.5.0.1.1 .
Copying KZPSAA12 from DKA500.5.0.1.1 .
UPD> See below for update steps

```

## AlphaBIOS Console

- a. Insert the CD in the local CDROM.
- b. Enter the AlphaBIOS menu by typing **ARC** or **AlphaBIOS** or initializing the system when `os_type = nt`
- c. AlphaBIOS -Select **F2** to go into Setup then select **Upgrade AlphaBIOS**

## Method 2 - Boot Console CD, Firmware Floppy or Network Device

### CD

- a. Insert the CD in the local CDROM.
- b. Execute LFU command and select device `cda0` for the CDROM and specify `as4x00fw`.

```
P00>>> lfu
***** Loadable Firmware Update Utility *****

Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: cda0
Please enter the name of the firmware files list, or
Press <return> to use the default filename
[AS4X00IO, (AS4X00CP)]: as4x00fw
```

### Floppy

- a. Create a system and/or I/O firmware floppies using the following procedure. You will need up three floppies. Two for system firmware and one for I/O firmware. This is as of V5.4 . With V5.3 or earlier two floppies would work.
- b. Execute the following command file to create both floppies

```
$!
$! make_rhods2cp_1and2.com
$!
$ inquire ignore "Insert first blank HD floppy in DVA0, then continue"
$ set verify
$ set proc/priv=all
$ init/density=hd/index=begin dva0: rhods2cp1
$ mount dva0: rhods2cp1
$ create/directory dva0:[as4x00]
$ copy as4x00fw.sys dva0:[as4x00]as4x00fw.sys
$ copy as4x00cp.sys dva0:[as4x00]as4x00cp.sys
$ copy rhreadme.sys dva0:[as4x00]rhreadme.sys
$ copy rharcrom.sys dva0:[as4x00]rharcrom.sys
$ dismount dva0:
$ set noverify
$ inquire ignore "Insert second blank HD floppy in DVA0, then continue"
$ set verify
$ set proc/priv=all
$ init/density=hd/index=begin dva0: rhods2cp2
$ mount dva0: rhods2cp2
$ create/directory dva0:[as4x00]
$ copy rhsrcrmrom.sys dva0:[as4x00]rhsrcrmrom.sys
$ dismount dva0:
$ set noverify
$ exit
```

If creating a diskette for updating your I/O option firmware only:

```
$!
$! make_rhods2io.com
$!
$ inquire ignore "Insert blank HD floppy in DVA0, then continue"
$ set verify
$ set proc/priv=all
$ init/density=hd/index=begin dva0: rhods2io
$ mount dva0: rhods2io
$ create/directory dva0:[as4x00]
$ create/directory dva0:[options]
$ copy as4x00fw.sys dva0:[as4x00]as4x00fw.sys
$ copy as4x00io.sys dva0:[as4x00]as4x00io.sys
$ copy rhreadme.sys dva0:[as4x00]rhreadme.sys
$ copy ccmab022.sys dva0:[options]ccmab022.sys
$ copy cipca420.sys dva0:[options]cipca420.sys
$ copy dfpaa320.sys dva0:[options]dfpaa320.sys
$ copy kzpsaal2.sys dva0:[options]kzpsaal2.sys
$ dismount dva0:
$ set noverify
$ exit
```

- c. Shutdown the OS and init the machine at the P00>>> prompt.
- d. Execute LFU command and select device dva0 for the floppy device and the filenames as4x00cp or as4x00io depending if you want to update console or I/O firmware. If running console version V1.2 or greater you can specify as4x00fw and it will load files off the console firmware floppy and then request you load the I/O firmware floppy.

```
P00>>> lfu
***** Loadable Firmware Update Utility *****

Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: dva0

Please enter the name of the firmware files list, or
Press <return> to use the default filename
[AS4X00IO, (AS4X00CP)]: as4x00cp
```

## Network

- a. Copy the following files to MOM\$LOAD of you local MOP server.  
as4x00cp.sys  
as4x00fw.sys  
as4x00io.sys  
ccmab022.sys  
cipca420.sys  
dfpaa320.sys  
kzpsaal2.sys  
rhreadme.sys  
rhsrcrmrom.sys  
rharcrom.sys  
rhreadme.sys
- b. Set the attributes for the file using the following OpenVMS command on each file.  
\$ set file/attr=rfm:fix,lrl:512,mrs:512,rat:none as4x00\_v6\_0.sys

- c. Execute LFU command and select device EWA0 for Digital PCI Ethernet or FWA0 for Digital PCI FDDI (DEFPA). Specify the files as4x00fw, as4x00cp or as4x00io depending on what you want to update.

```
P00>>> lfu
***** Loadable Firmware Update Utility *****

Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: ewa0

Please enter the name of the firmware files list, or
Press <return> to use the default filename
[AS4X00IO, (AS4X00CP)]: as4x00fw
```

### **Method 3 - Boot the Console CD Off of an Infoserver**

- a. Insert CD in the Infoserver
- b. P00>>> **boot exa0 -file as4x00\_v6\_0** (leave off the .sys extension)

### **Method 4 - Booting Off the Network**

- a. Copy firmware to MOM\$LOAD of an existing node in the cluster
- b. Set the attributes on the file with the following commands:  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) as4x00\_v6\_0.sys**
- c. Enable service on that node from NCP

```
$ MC NCP
MC NCP> Show Known Circuit Characteristic
Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

Circuit = BNA-0
State = on
Service = disabled (if enabled skip to boot command)
Counter timer = 65534
Designated router = 28.1023 (CX028A)
Cost = 4
Maximum routers allowed = 33
Router priority = 64
Hello timer = 15
Type = Ethernet
Adjacent node = 28.1023 (CX028A)
Listen timer = 30

NCP> Set Circ BNA-0 State OFF - This step will stop network activity
NCP> Set Circ BNA-0 Service Enable
NCP> Set Circ BNA-0 State ON
```

- d. P00>>> **b -fl 0,0 EWA0 -fi as4x00\_v6\_0**  
(Leave off .SYS or node that services request will get an error - BAD MOP FID)

```
Determine device name with SHOW DEVICE at >>> .
FDDI = FWA0
DE4x0/DE500 = EWA0
```

## Method 5 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

### **Non-System Disk**

- a. Locate the as4x00\_v6\_0.exe file
- b. Set the attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:  
\$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) as4x00\_v6\_0.exe  
\$ copy/contiguous as4x00\_v6\_0.exe "non\_system\_disk":[directory]
- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

#### **\$ MCR Writeboot**

Update VAX portion of boot block (default is Y): **No**

Update Alpha portion of boot block (default is Y): **Yes**

Target system device (and boot file if not VMB.EXE): \$1\$dua5:[TEMP]as4x00\_v6\_0.exe

- d. P00>>> **b -fl 0,0 dua5**

### **System Disk**

- a. Only steps a and b above are used. Do **NOT** execute writeboot step c.
- b. Specify the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for the bootfile.  
>>> **b -fl 0,a0 dua0**  
bootfile: dua0:[sys0.sysexec]as4x00\_v6\_0.exe

## Method 6 - Boot Off of a Bootable Floppy - V5.2 Firmware or Earlier

### **OpenVMS AXP**

- a. Init and mount to floppy. Create a directory and copy the firmware to the floppy with the following commands.  
\$ init/dens=HD/index=begin dva0: fwupdate  
\$ mount dva0: fwupdate  
\$ create/dir dva0:[AS4x00]  
\$ copy/contiguous as4x00\_v5\_2.exe dva0:[AS4x00]fwupdate.exe
- b. **MCR Writeboot**  
Update VAX portion of boot block (default is Y): **No**  
Update Alpha portion of boot block (default is Y): **Yes**  
[enter AXP bootfile:] **dva0:[AS4x00]fwupdate.exe**
- c. Dismount the disk and shutdown VMS.  
\$ **dismount dva0:**
- d. Insert the floppy on the target system and boot it from the >>>.  
>>> **boot dva0**

## Tru64 UNIX

- a. Go to the Digital Internet firmware site at <http://ftp.digital.com/pub/Digital/Alpha/firmware/>
- b. Copy the firmware.exe file from the AS4x00 directory to your system and rename it fwupdate.exe
- c. Download the file mkbootfirm.tar from the firmware website.  
<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/mkbootfirm.tar>

You can untar mkbootfirm on your target Tru64 UNIX system with the command:  
**# tar xvf mkbootfirm.tar**

- d. Make sure you have a floppy that has been low-level formatted.  
For example, to low-level format a floppy in drive 0:  
**fddisk -fmt /dev/rfd0a**
- e. Change default to directory with mkbootfirm.exe  
**cd mkbootfirm**
- f. Run mkbootfirm on the .exe firmware image that you downloaded. mkbootfirm uses a .exe firmware image to create a file that can be dd'd to floppy.

The following will create a bootable floppy from a downloaded .exe firmware image:

```
./mkbootfirm fwupdate.exe | dd of=/dev/rfd0c bs=64k
```

**NOTE:** Assumes mkbootfirm.exe is in current directory and floppy is in drive 0

- g. Insert the floppy on the target system and boot it from the SRM console:  
P00>>> **boot dva0**

## Windows NT

- a. Copy the firmware file to a FAT formatted floppy with the update image filename of a:\fwupdate.exe.
- b. Shut down NT and from the NT Console menu, select "Install new firmware".

## Method 7 - Boot Off of a Bootable Floppy - V5.3 Firmware or Later

### Windows NT

- a. Fat format up to three floppies. To update system firmware you will need two floppies. However if you want to update IO firmware, you will need three floppies. A disk1.zip, disk2.zip and disk3.zip file are available on the firmware website.
- b. Locate and copy the following files to disk #1.
  - as4x00cp.sys Two-Disk LFU file list
  - as4x00fw.sys Three-Disk LFU file list
  - rhreadme.sys LFU text file
  - rharcrom.sys AlphaBios/ARC firmware
- c. Locate and copy the following files to disk #2 to update SRM firmware:
  - rhsrcrmrom.sys SRM console firmware

d. Locate and copy the following files to disk #3 to update I/O firmware.

- as4x00.sys        IO LFU update file
- rhreadme.sys     LFU text file
- cipca315.sys     CIPCA firmware
- dfxaa320.sys     DFXAA firmware
- kzpsaa12.sys     KZPSA firmware
- ccmab022.sys     CCMAB firmware

e. At the >>> type LFU and enter when it asks for the filename enter asl200cp (cpu firmware), asl200io (IO firmware) or asl200fw (system and IO firmware).

f. I will prompt you to load the floppies in one at a time. When it has read all three floppies you will come to a UPD? prompt where you can update firmware.

**Note** When Using Three Disks: After updating console firmware with disk1 and disk2, you can update I/O firmware from disk3 by re-invoking the LFU via LFU command at the UPD> prompt. When prompted for input, provide the alternate firmware files list filename.

#### **Method 8 - BOOTP Network Upgrade - Tru64 UNIX**

a. Mount the Firmware Update CD using the following command:

```
mount -rt cd95p -o noversion /dev/rz4c /mnt
```

b. Modify or Create the Client Database in the /etc/bootptab File

```
<host>:ht:<hw_type>:ha=<hw_addr>:bf=<filename>:ip=<ip_addr>
```

where:

**host** is the system name in /etc/hosts

**hw\_type** is the hardware type. Proteon is ht = 4.

Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.

**hw\_addr** is the hardware address: use the console command show device.

**filename** is the name of the default bootfile image:

**ip\_addr** is the Internet protocol address of the system name in /etc/hosts.

The following is an example of a bootptab file for the AlphaServer 4000/4100:  
bigsox:ht=1:ha=08002b236423:bf=/mnt/AS4x00/as4x00\_v6\_0.EXE;1:ip=16.182.0.87

c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:

```
tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt
bootps dgram udp wait root /usr/sbin/bootpd bootpd
```

d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**

```
ps aux | grep ine
```

```
kill process# <ine process number>
```

e. Restart the inetd daemon:

```
/usr/sbin/inetd
```

#### **Note**

The bootpd and tftpd daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

**Use Man bootpd and man tftpd**



f. Enter the following command to boot from the BOOTP server:

```
>>> boot -p bootp ewa0
```

Should a boot file "pathname" need to be specified in must be in quotes

```
>>> boot -p bootp ewa0 -file "/dir1/dir2/filename"
```

5. List the current version then Update the firmware at the UPD> prompt.  
 Use **update \*** or **update \*SRM\***, or **update al\*** or **update KZPSA0** etc.  
 Then verify the update before exiting.

#### Starting Firmware Update Utility

##### Unpacking firmware files

```
as4x00_readme adr = 1000020 len = 1e00(7680)
srmrom adr = 1002040 len = ef800(980992)
arcrom adr = 10f1a60 len = 70000(458752)
ccmab_fw adr = 1192ca0 len = 80200 (524800)
cipca_fw adr = 1161c80 len = ce00(52736)
dfxaa_fw adr = 12ddc20 len = 38a00(231936)
kzpsa_fw adr = 1316840 len = 74000(475136)
```

\*\*\*\*\* Loadable Firmware Update Utility \*\*\*\*\*

| Function  | Description                                                     |
|-----------|-----------------------------------------------------------------|
| Display   | Displays the system's configuration table.                      |
| Exit      | Done exit LFU (reset).                                          |
| List      | Lists the device, revision, firmware name, and update revision. |
| Lfu       | Restarts LFU.                                                   |
| Readme    | Lists important release information.                            |
| Update    | Replaces current firmware with loadable data image.             |
| Verify    | Compares loadable and hardware images.                          |
| ? or Help | Scrolls this function table.                                    |

- a. From the >>> or UPD> prompt save contents of NVRAM to floppy using **SAVE\_NVRAM**.

- b. UPD> **list**

| Device    | Current Revision | Filename | Update Revision |
|-----------|------------------|----------|-----------------|
| AlphaBIOS | V5.70-0          | arcrom   | V5.70-0         |
| kzpsa0    | A12              | kzpsa_fw | A12             |
| srmflash  | V5.8-2           | srmrom   | V5.9-5          |
|           |                  | cipca_fw | A420            |
|           |                  | dfxaa_fw | 3.20            |

##### NOTE:

If upgrading to V5.3 or later for the first time, or downgrading from V5.3 or 5.4 to a lower version, make sure you read the release notes.  
 The correct update procedure is as follows.

1. Boot firmware CD
2. Update SRM
3. Exit and reboot firmware CD
4. Update AlphaBIOS
5. Exit

- c. UPD> **update \*** - Not valid if updating to or downgrading from V5.3. See Note above.

WARNING: updates may take several minutes to complete for each device.

Confirm update on: AlphaBIOS [Y/(N)] **y**  
 DO NOT ABORT!

AlphaBIOS            Updating to V5.70-0...        Verifying V5.70-0...    PASSED.

Confirm update on: kzpsa0                    [Y/(N)] **y**

                                 DO NOT ABORT!  
kzpsa0                Updating to A12        ... Verifying A12...    PASSED.

Confirm update on: srmflash                [Y/(N)] **y**

                                 DO NOT ABORT!  
srmflash              Updating to V5.9-5..... Verifying V5.9-5...PASSED.

d. UPD> **verify**  
AlphaBIOS            Verifying V5.70-0...    PASSED.  
kzpsa0                Verifying A12...    PASSED.  
srmflash              Verifying V5.9-5...    PASSED.

e. UPD> **exit**  
Initializing...

f. From the >>> restore the NVRAM contents with **RESTORE NVRAM** or reboot the firmware CD and **RESTORE NVRAM** if you did the **SAVE NVRAM** in step b. Otherwise check and set the following environmental variables.

P00>>> **set Bootdef\_dev**  
         **set Boot\_osflags**  
         **set Auto\_action**

g. P00>>> **init**

h. Starting with the V5.3 CD, if running Windows NT, do a **build -e** after updating firmware.

6. If ECU is required to be run you must use the AlphaBIOS.

a. P00>>> **AlphaBIOS**

b. Select **Run ECU from Floppy**.

7. If RCU is required to be run you must use the AlphaBIOS.

a. P00>>> **AlphaBIOS**

b. Select **Run Maintenance Program**

c. In the Run Maintenance Program dialog box type in the Program Name: field  
  **\utility\swxcrmgr\swxcrmgr** for V3.8 CD or less

or

**\utility\swxcrmgr\ra200rcu** for any CD from V3.9 or later.

8. If the KZPSA Configuration Utility is required to be run you must use the AlphaBIOS.

a. P00>>> **AlphaBIOS**

b. Select **Run Maintenance Program**

c. In the Run Maintenance Program dialog box type **cnfgdiag.exe**

9. You can also set up some controller parameters at the console using the PK\*0 variables. There are different parameters depending on the controller type.

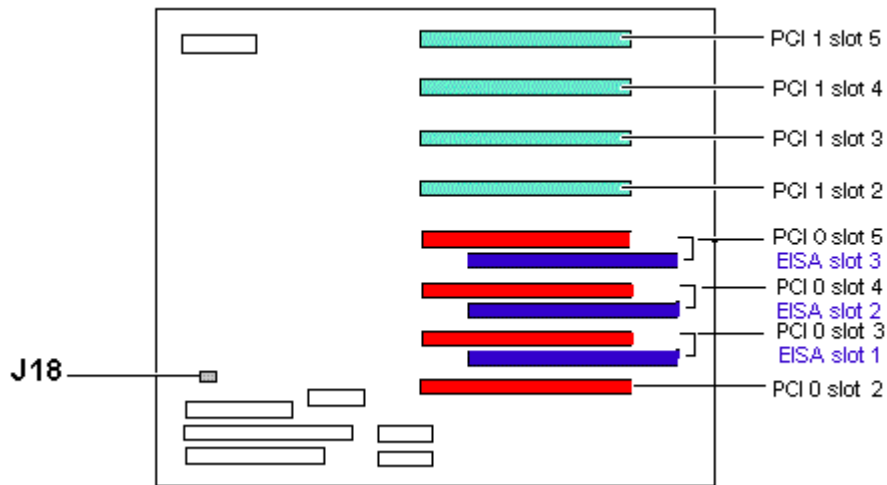
Some you may see are

- PKA0\_DISCONNECT
- PKA0\_FAST
  - Specifies mode of controller
  - 0 = Normal
  - 1 = Fast
- PKA0\_HOST\_ID
  - Specifies SCSI Host ID
  - Range is 0-7. 7 is the Default.
- PKA0\_SOFT\_TERM
  - Enables or disables SCSI terminators. This environment variable applies to systems using the QLogic ISP1020 SCSI controller. The QLogic ISP1020 SCSI controller implements the 16-bit wide SCSI bus. The QLogic module has two terminators, one for the 8 low bits and one for the high 8 bits. There are five possible values:
    - off-Turns off both low 8 bits and high 8 bits.
    - low-Turns on low 8 bits and turns off high 8 bits.
    - high-Turns on high 8 bits and turns off low 8 bits.
    - on-Turns on both low 8 bits and high 8 bits.
    - diff-Places the bus in differential mode.
- PKA0\_TERMPOWER
  - To change KZPSA SCSI termination power setting, enter the following console command:
    - 0 = disable termpower
    - 1 = enable termpower



**AlphaServer 4000/4100 Jumpers**

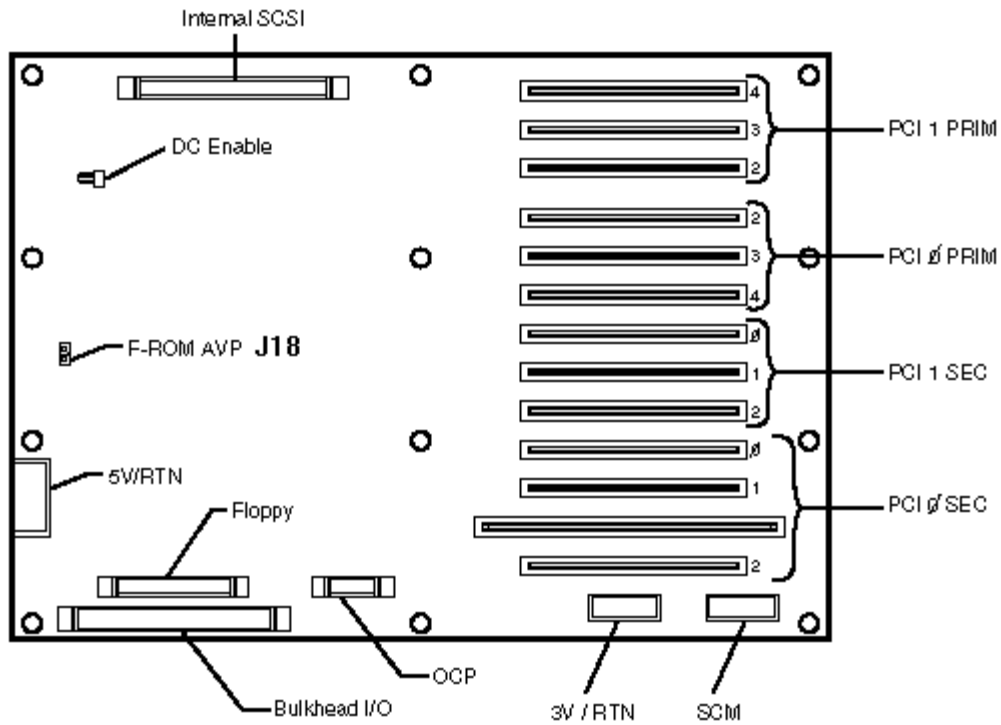
**PCI/EISA Motherboard**



J18 Installed = Flash ROM writes enabled

**AlphaServer 4000/4100 LP Jumpers**

**PCI/EISA Motherboard**



J18 Installed = Flash ROM writes enabled



## AlphaServer 8200/8400

The console firmware on the AlphaServer 8200/8400 is located on the CPU module. All Cpu's must run the same version of firmware. You can **NOT** have mixed versions and expect it to work. Any time a CPU module is added or replaced, the firmware will most likely need to be upgraded. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available. The firmware files used for the 8200/8400 and GS60/GS140 are different. Make sure you use the correct file.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off the CDROM, Firmware floppy or over the network using LFU command.
- Over the network using the .SYS firmware file.
- Off of an infoservert using the Alpha AXP System Firmware Update Utility CD.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- From the BOOTP server (Unix).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision.
- Record all console environmental variables by typing SHOW \* at the >>>.
- Determine which method and firmware version will be used to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Locate the appropriate RCU and ECU diskettes if required.
- Boot the firmware file (LFU).
- Use the verify and update commands at the UPD> prompt.
- When done exit from LFU.
- Execute a Build NVR and a Build EEPROM at the >>> for each CPU.
- Init the machine and reboot.
- Run ECU in required.

1. First type INIT at the >>> to see what the current version of console loaded is. It is at the very bottom of the configuration map.

```
P02>>> init
F E D C B A 9 8 7 6 5 4 3 2 1 0 NODE #
 A M P . TYP
 O + ++ . ST1
 EB . BPD
 O + ++ . ST2
 EB . BPD
 + + ++ . ST3
 EB . BPD

 + + + + + + + + C0 PCI +
 + . + + . . . + C1 PCI +

 . A0 ILV
 . 256 256MB
```

AlphaServer 8200 Console V4.1-6, SROM V3.1, 15-Nov-1996 13:25:28

2. P02>>> **show \*** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.

```
Bootdef_dev
Boot_osflags
Auto_action
```

- a. Set Auto\_action to HALT  
P02>>> **set Auto\_action halt**

3. Boot the firmware using one of the following methods.

#### **Method 1 - Boot the Console CD Off a Local CDROM**

##### **SRM Console**

- a. Insert the CD in the local CDROM.
- b. P02>>> **boot -f1 0,a0 DKA600**  
Bootfile: **[AS8x00]as8000\_v16.exe** - AlphaServer 8200/8400  
UPD> See below for update steps

##### **AlphaBIOS Console**

Do NOT use this procedure with the V5.3 firmware on the AlphaServer 8200/8400

- a. Insert the CD in the local CDROM.
- b. Enter the AlphaBIOS menu by typing **ARC** or **AlphaBIOS** or initializing the system when os\_type = nt
- c. AlphaBIOS - Select **F2** to go into Setup then select **Upgrade AlphaBIOS**
- d. LFU will boot. You must tell the firmware where it is loading from, CDA0 (CD) or Ewa0 (network). (DVA0 will not work since the firmware will not fit on a floppy)
- e. Then specify the filename to load. There are 3 choices.  
**AS8X00FW** (CPU and IO),  
**AS8X00CP** (CPU only)  
**AS8X00AB** (AlphaBIOS only)  
**AS8X00IO** (IO only)

#### **Method 2 - Boot Console CD, Firmware Floppy or Network Device**

##### **CD**

- a. Insert the CD in the local CDROM.
- b. Execute LFU command and select device cda0 for the CDROM and specify as8x00fw.

```
P00>>> lfu
***** Loadable Firmware Update Utility *****

Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: cda0
Please enter the name of the firmware files list, or
Press <return> to use the default filename
[AS8X00IO,(AS8X00CP)]: as8x00fw
```



## Floppy - NT

- a. Fat format 3 floppies.
- b. Copy the following files to floppy 1
  - as8x00fw.sys
  - as8x00cp.sys
  - as8x00ab.sys
  - tlreadme.sys
  - tlsrmrom.sys
- c. Copy the following files to floppy 2
  - tl56ab.sys
- d. Copy the following files to floppy
  - as8x00fw.sys
  - as8x00io.sys
  - tlreadme.sys
  - cipca420.sys
  - cixcd007.sys
  - defaa110.sys
  - demfa021.sys
  - demna094.sys
  - dfxaa320.sys
  - kcm44cfg.sys
  - kcm44031.sys
  - kdm70044.sys
  - kfmsb024.sys
  - kfmsb001.sys
  - kzmsa056.sys
  - kzpsaa12.sys
  - ccmab022.sys
- e. Execute LFU command and select device dva0 for the floppy device and the filenames as8x00cp or as8x00io depending if you want to update console or I/O firmware. You can also specify as8x00ab and load only AlphaBIOS code or select as8x00fw and load SRM, AlphaBIOS and option firmware.

```
P00>>> lfu
***** Loadable Firmware Update Utility *****

Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: dva0

Please enter the name of the firmware files list, or
Press <return> to use the default filename
[AS8X00IO,(AS8X00CP)]: as8x00cp
```

## Floppy - OpenVMS

- a. Create a system and/or I/O firmware floppies using the following procedure. You will need up three floppies. Two for system firmware and one for I/O firmware.
- b. Execute the following command file to create both floppies

```
$!
$! make_tlodscp_1and2.com
$!
$ inquire ignore "Insert first blank HD floppy in DVA0, then continue"
$ set verify
$ set proc/priv=all
$ init/density=hd/index=begin dva0: tlods2cp1
$ mount dva0: tlodscp1
$ create/directory dva0:[as8x00]
$ copy as8x00fw.sys dva0:[as8x00]as8x00fw.sys
$ copy as8x00cp.sys dva0:[as8x00]as8x00cp.sys
$ copy as8x00ab.sys dva0:[as8x00]as8x00ab.sys
$ copy threadme.sys dva0:[as8x00]theadme.sys
$ copy tlrmmrom.sys dva0:[as8x00]tlrmmrom.sys
$ dismount dva0:
$ set noverify
$ inquire ignore "Insert second blank HD floppy in DVA0, then continue"
$ set verify
$ set proc/priv=all
$ init/density=hd/index=begin dva0: tlods2cp2
$ mount dva0: tlods2cp2
$ create/directory dva0:[as8x00]
$ copy tl56ab.sys dva0:[as8x00]tl56ab.sys
$ dismount dva0:
$ set noverify
$ exit
```

If creating a diskette for updating your I/O option firmware only:

```
$!
$! make_tlods2io.com
$!
$ inquire ignore "Insert blank HD floppy in DVA0, then continue"
$ set verify
$ set proc/priv=all
$ init/density=hd/index=begin dva0: tlods2io
$ mount dva0: tlods2io
$ create/directory dva0:[as8x00]
$ create/directory dva0:[options]
$ copy as8x00fw.sys dva0:[as8x00]as8x00fw.sys
$ copy as8x00io.sys dva0:[as8x00]as8x00io.sys
$ copy ttheadme.sys dva0:[as8x00]theadme.sys
$ copy cipca420.sys dva0:[options]cipca420.sys
$ copy cixcd007.sys dva0:[options]cixcd007.sys
$ copy defaa110.sys dva0:[options]defaa110.sys
$ copy demfa021.sys dva0:[options]demfa021.sys
$ copy demna094.sys dva0:[options]demna094.sys
$ copy dfxaa320.sys dva0:[options]dfxaa320.sys
$ copy kcm44cfg.sys dva0:[options]kcm44cfg.sys
$ copy kcm44031.sys dva0:[options]kcm44031.sys
$ copy kdm70044.sys dva0:[options]kdm70044.sys
$ copy kfmsb024.sys dva0:[options]kfmsb024.sys
$ copy kfmsb001.sys dva0:[options]kfmsb001.sys
$ copy kzmsa056.sys dva0:[options]kzmsa056.sys
$ copy kzpsaal2.sys dva0:[options]kzpsaal2.sys
$ copy ccmab022.sys dva0:[options]ccmab022.sys
$ dismount dva0:
$ set noverify
$ exit
```

- c. Shutdown the OS and init the machine at the P00>>> prompt.

- d. Execute LFU command and select device dva0 for the floppy device and the filenames as8x00cp or as8x00io depending if you want to update console or I/O firmware. You can also specify as8x00ab to load AlphaBIOS firmware only or as8x00fw and it will load system and I/O firmware.

```
P00>>> lfu
***** Loadable Firmware Update Utility *****

Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: dva0

Please enter the name of the firmware files list, or
Press <return> to use the default filename
[AS8X00IO, (AS8X00CP)]: as8x00cp
```

## Network

- a. Copy the following files to MOM\$LOAD of you local MOP server.
- as8x00cp.sys
  - as8x00ab.sys
  - as8x00fw.sys
  - as8x00io.sys
  - tlreadme.sys
  - tlsrcmrom.sys
  - tl56ab.sys
  - cipca420.sys
  - cixcd007.sys
  - defaal10.sys
  - demfa021.sys
  - demna094.sys
  - dfxaa320.sys
  - kcm44cfg.sys
  - kcm44031.sys
  - kdm70044.sys
  - kfmsb024.sys
  - kfmsb001.sys
  - kzmsa056.sys
  - kzpsaa12.sys
  - ccmab022.sys
- b. Set the attributes for the file using the following OpenVMS command on each file.
- ```
$ set file/attr=rfm:fix,lrl:512,mrs:512,rat:none filename.sys
```
- c. Execute LFU command and select device EWA0 for Digital PCI Ethernet or FWA0 for Digital PCI FDDI (DEFPA). Specify the files as8x00fw, as8x00cp, as8x00ab or as8x00io depending on what you want to update.

```
P00>>> lfu
***** Loadable Firmware Update Utility *****

Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: ewa0

Please enter the name of the firmware files list, or
Press <return> to use the default filename
[AS8X00IO, (AS8X00CP)]: as8x00fw
```

Method 3 - Boot the Console CD Off of an Infoserwer

- a. Insert CD in the Infoserwer
- b. P02>>> **boot exa0 -file as8000_v16** (leave off the .sys extension)

Method 4 - Booting Off the Network

- a. Copy firmware.sys file to MOM\$LOAD of an existing node in the cluster
- b. Set the attributes on the file with the following commands:
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) as8000_v16.sys**
- c. Enable service on that node from NCP

```
$ MC NCP
MC NCP> Show Known Circuit Characteristic

Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

Circuit = BNA-0

State                = on
Service              = disabled (if enabled skip to boot command)
Counter timer        = 65534
Designated router    = 28.1023 (CXO28A)
Cost                 = 4
Maximum routers allowed = 33
Router priority       = 64
Hello timer          = 15
Type                 = Ethernet
Adjacent node         = 28.1023 (CXO28A)
Listen timer         = 30
NCP> Set Circ BNA-0 State OFF - This step will stop network activity
NCP> Set Circ BNA-0 Service Enable
NCP> Set Circ BNA-0 State ON
```

- d. P02>>> **b -fl 0,0 EXA0 -fi as8000_v16**

(Leave off .SYS or node that services request will get an error - **BAD MOP FID**)

Determine device name with SHOW DEVICE at >>> .
DEMNA = EXA0 , DE4x0/DE500 = EWA0, DEMFA = FXA0 , PCI FDDI - FWA0

Method 5 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

Non-System Disk

- a. Locate the as8000_v16.exe file
- b. Set the attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) as8000_v16.exe**
\$ **copy/contiguous as8000_v16.exe "non_system_disk":[directory]**
- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

\$ MCR Writeboot

```
Update VAX portion of boot block (default is Y): No
Update Alpha portion of boot block (default is Y): Yes
Target system device (and boot file if not VMB.EXE): $1$dua5:[TEMP]as8000_v16.exe
```

- d. P02>>> **b -fl 0,0 dua5**

System Disk

- a. Only steps a and b above are used. Do **NOT** execute writeboot step c.
- b. Specify the flags of 0,a0 a0 and use "system disk":[sys0.sysexec]filename for bootfile.
 >>> **b -fl 0,a0 dua0**
 bootfile: **dua0:[sys0.sysexec]as8000_v16.exe**

Method 6 - BOOTP Network Upgrade - Tru64 UNIX

- a. Mount the Firmware Update CD using the following command:
 # **mount -rt cd9660 -o noversion /dev/rz4c /mnt**
- b. Modify or Create the Client Database in the /etc/bootptab File
 <host>:ht=<hw_type>:ha=<hw_addr>:bf=<filename>:ip=<ip_addr>

 where:
 host is the system name in /etc/hosts

 hw_type is the hardware type. Proteon is ht = 4.
 ht = 1. Regular token-ring (IEEE 802) is ht = 6.

 hw_addr is the hardware address: use the console command show device.

 filename is the name of the default bootfile image:

 ip_addr is the Internet protocol address of the system name in /etc/hosts.

 The following is an example of a bootptab file for the AlphaServer 8200/8400:
 bigsox:ht=1:ha=08002b236423:bf=/mnt/AS8000/as8000_v16.EXE;1:ip=16.182.0.87
- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:

 tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt
 bootps dgram udp wait root /usr/sbin/bootpd bootpd

d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**
 # **ps aux | grep ine**
 # **kill process#** <ine process number>

e. Restart the inetd daemon:
 # **/usr/sbin/inetd**

Note

The bootpd and tftp daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

Use Man bootpd and man tftpd

- f. Enter the following command to boot from the BOOTP server:
 >>> **boot -p bootp ewa0**
 Should a boot file "pathname" need to be specified in must be in quotes

 >>> **boot -p bootp ewa0 -file "/dir1/dir2/filename"**

4. Update the firmware at the UPD> prompt.

- a. At the UPD prompt type list to see what versions are loaded (Current Revision) and what versions are available to update (Update Revision).

UPD> **list**

Device	Current Revision	Filename	Update Revision
kn7cc-ab0_arc	V5.70c	arcrom	V5.70c
kn7cc-ab0	V5.8-2	kn7cc_fw	V5.9-2
kzpsa0	A12	kzpsa_fw	A12

pfi0	3.20	dfxaa_fw	3.20
		ccmab_fw	22
		cipca_fw	A420
		cixcd_fw	7
		defaa_fw	1.10
		demfa_fw	2.1
		demna_fw	9.4
		kcm44_fw	3.1
		kdm70_fw	4.4
		kfmsb_fw	2.4
		kzmsa_fw	5.6
		kzpsa_fw	A12

b. Update the firmware using one of the following commands

UPD> **Update *** or **Update** - Update all supported devices
 WARNING: updates may take several minutes to complete for each device.

Confirm update on: kn7cc-ab0_arc [Y/(N)] **y**

DO NOT ABORT!
 kn7cc-ab0_arc Updating to V5.70c... Verifying V5.70c... PASSED.

Confirm update on: kn7cc-ab0 [Y/(N)] **y**

DO NOT ABORT!
 kn7cc-ab0 Updating to V5.9-2... Verifying V5.9-2... PASSED.

Confirm update on: kzpsa0 [Y/(N)] **n**

Confirm update on: pfi0 [Y/(N)] **n**

UPD> **Update KN7CC*** - Update all KN7CC CPUs. Can substitute a number for the * to update a specific CPU.

Confirm update on: kn7cc-ab0_arc [Y/(N)] **y**

DO NOT ABORT!
 kn7cc-ab0_arc Updating to V5.70c... Verifying V5.70c... PASSED.

Confirm update on: kn7cc-ab0 [Y/(N)] **y**

DO NOT ABORT!
 kn7cc-ab0 Updating to V5.9-2... Verifying V5.9-2... PASSED.

UPD> **Update PFIO** - Update DEC PCI FDDI (DEFPA) only. Can specify other devices.

WARNING: updates may take several minutes to complete for each device.

Confirm update on: pfi0 [Y/(N)] **y**

DO NOT ABORT!
 pfi0 Updating to 3.20... Verifying 3.20... PASSED.

c. After you have updated the firmware type **verify** to check the update

UPD> **verify**
 kn7cc-ab0_arc Verifying V5.70c... PASSED.
 kn7cc-ab0 Verifying V5.9-2... PASSED.
 kzpsa0 Verifying A12... PASSED.
 pfi0 Verifying 3.20... PASSED.

d. Type `Exit` to leave the utility.

```
UPD> exit  
Initializing...
```

5. After you have updated the firmware you **MUST FORMAT THE EEPROMs** to the new console firmware format.

Note

This process will require you to re-enter your default boot specifications and EWx0_mode EV settings after you have re-initialized.
BE SURE TO RECORD THE CURRENT SETTINGS BY TYPING SHOW * BEFORE REFORMATTING THE EEPROMS.

- a. Show environmental variables using console `SHOW` command.

```
P00>>> show *
```

- b. The `build -e` command is used to format the CPUs EEPROMs. Prior to console version V5.2 you will need to execute a `SET CPU #` (# = cpu number) to each CPU before executing this command. With console version V5.2 all CPUs EEPROMs will be built using the `build` command once. If the `SET CPU` command fails, you will need to modify the console variables `CPU_ENABLED` and `CPU_PRIMARY` to select the specific CPU. These variables are a bit mask. One bit for each CPU. CPU 0 = bit 0, CPU 1 = bit 1 etc. Just clear bits of CPUs you want to disable and `INIT`. Set the variable back to `FFFF` when finished. All Turbolaser can use single or dual CPU modules. The CPUs are numbered based on the slot they are plugged into.

```
CPU0/CPU1   Slot 0  
CPU2/CPU3   Slot 1  
CPU4/CPU5   Slot 2  
CPU6/CPU7   Slot 3  
CPU8/CPU9   Slot 4  
CPU10/CPU11 Slot 5  
CPU12/CPU13 Slot 6
```

```
P00>>> set cpu 0
```

```
P00>>> build -e  
Build EEPROM on kn7cc-ab0 ? [Y/N]> y
```

EEPROM built on kn7cc-ab0

```
P00>>> set cpu 2    - note prompt changed to P02>>> to indicate CPU 2.
```

```
P02>>> build -e  
Build EEPROM on kn7cc-ab2 ? [Y/N]> y
```

EEPROM built on kn7cc-ab2

The `build -e` command may prompt you for a system serial number and module part number.

```
P00>>> build -e  
Build EEPROM on kn7cc-ab0 ? [Y/N]> y  
Please input module information for CPU module in slot 0  
Module Serial Number> AY80973463  
Module Unified 2-5-2.4 Part Number> 00-E2065-DA.C02
```

EEPROM built on kn7cc-ab0

- c. The build -n command is used to format the NVR (non-volatile RAM) .
This command is not documented in the release notes. It is valid and
may correct problems after the update. You must do this on each cpu.

```
P00>>> build -n
Build NVR on kn7cc-ab0 ? [Y/N]> y

NVR built on kn7cc-ab0
```

- d. Set console environmental variables back to original settings as necessary.

```
P00>>> Set bootdef_dev dka0.0.0.1.0
P00>>> Set boot_osflags 0,0
P00>>> Set ewa0_mode twisted-pair
```

- e. P02>>> init

6. Before attempting to run these utilities make sure the following console
environmental variables are set as follows:

Console_mode **Advanced** - Defines MODE setting on INIT.
 Overrides SET MODE command after INIT.

Arc_enable **ON** - Will make specific variable used below available to you.
 Variables like RCU, SWXCRMGR ECU and EEROMCFG are some.

```
P00>>>sho console_mode
console_mode            BASIC
P00>>>sho mode
Console is in basic mode
P00>>>sho arc_enable
arc_enable              ON
P00>>> set console_mode advanced
P00>>> show arc_enable
arc_enable              OFF
P00>>> set arc_enable on
P00>>> init
```

- a. On systems with an EISA bus you will need to run the EISA Configuration
Utility (ECU) whenever the configuration is changed by adding, removing or
moving EISA modules. There are 2 versions of the program. One version for
WNT and one version for Alphas running OpenVMS or Tru64 UNIX. After a
firmware upgrade if the configuration does not change you will need to run
ECU and the Save and Exit.

If you have OS_TYPE set to NT and run ECU it will attempt to load AlphaBIOS
and run it from there. However if OS_TYPE is set to OpenVMS or UNIX it will
start ECU without calling AlphaBIOS first.

Certain minimum versions of ECU are required with specific console versions.
ECU version 1.11 is available on Cybrary at
<http://Cybrary.inet.cpgcorp.net/DOWNLOAD/UTILITIES/SYSTEM/contents.html#ECU>

```
P00>>>sho ecu
ECU                      fat:cf.exe
P00>>>runecu
Loading image...
Transferring control...
```


7. The RUN command has 4 options.

Rcu - Run the RAID Configuration Utility
swxcrcfw - Update the firmware on the RAID controller
eepromcfg - Run the ISP1020 EEPROM Configuration Utility (KFTIA and other
ISP1020 Controllers i.e. KZPBA)
util_cli - Run the KZPSA Configuration Utility
lp6ldr - KGPSA firmware update utility

RCU and SWXCRFW are on floppy and require a floppy drive. RCU is also on the CD. EEPROMCFG and UTIL_CLI are available on floppy or CD.

a. If RCU is required to be run you must set ARC_ENABLE ON.

```
P02>>> set arc_enable on
P02>>> set console_mode advanced
P02>>> init
P02>>> run rcu -p 1 (-p 1 specifies PCI bus 1 ) or to update firmware
P02>>> run swxcrcfw -p 1 -s "swxcrcfw.236" (V3.8 CD or less)
P02>>> run ra200fl -p 1 -s "swxcrcfw.242" (V3.9 CD)
        -p specifies the PCI bus
        -s specifies "parameter string" or file to load
```

b. If the ISP1020 EEPROM Configuration Utility is required.

```
P02>>> show device isp3 ! use SHOW DEVICE to find CD-ROM drive
```

```
polling for units on isp3, slot 5, bus 0, hose0...
dkd400.4.0.5.0      DKD400      RRD44      0064
dkd500.5.0.5.0      DKD500      RZ26L      440C
```

```
P02>>> run eepromcfg -d dkd400 -p 0
        -d dkd400 - specifies device where utility is located (CDROM)
        -p 0      - specifies PCI bus where option is installed
```

Or

```
P02>>> Run ISO9660:[utility]eepromcfg.exe -d dkd0 -p 0
```

On CDs V3.5 and earlier use

```
P02>>> run iso9660:[CDROM.UTILITY] eepromcfg.exe -d dkd500 -p 0
```

```
Loading image...
Transferring control...
```

The screen is erased, followed by

```
-----
ISP1020 EEROM Configuration Utility V1.1
-----

+===== Select ISP1020 =====+
| Bus      Virtual Slot      Address |
| [  0          0          01003000] |
|   0          1          01002000 |
|   0          4          01001000 |
|   0          5          01000000 |
|-----|
|      < (O)K >      < E(x)it >      |
+=====+
```

c. If the KZPSA Configuration Utility is required to be run

```
P02>>> set arc_enable on
P02>>> set console_mode advanced
P02>>> init
P02>>> load -f iso9660 - load CDROM driver
P02>>> run iso9660:[UTILITY]UTIL_CLI.EXE -d dkd500 -p 0
        (specify CD loaded into DKD500 on PCI bus 0 )
```

On CDs V3.5 and earlier use

```
P02>>> run iso9660:[CDROM.UTILITY]UTIL_CLI.EXE -d dkd500 -p 0
```

d. If updates to KGPSA firmware are required

```
P02>>> set arc_enable on
P02>>> set console_mode advanced
P02>>> init
P02>>> load -f iso9660 - load CDROM driver
P02>>> run iso9660:[UTILITY]lp6ldr.exe -d dkd500 -p 0
      (specify CD loaded into DKD500 on PCI bus 0 )
```

The utility lp6dutil will not properly function on the TurboLaser or GS series machine thru the serial port. You will see a repeating character problem.

8. You can also run KZSPA_EDIT from the console prompt to set up some KZSPA parameters.

kzpsa_edit - Edit KZSPA FLASH parameters.

OVERVIEW:

The kzpsa_edit command permits the modification of KZSPA Flash parameters from the console. Individual bits can be set or cleared, or bytes can be set to a specific value. Entering kzpsa_edit without an option or target device will list these parameters for all KZSPA devices in the system.

```
kzpsa_edit ( [busid] [<kzpsa_controller_name>]
             [fast]
             [termpwr]
             [-sd]
             [-offset n] [-value n]
             [-bit n] [-set]
                   [-clear] )
             [-p]
```

COMMAND ARGUMENT(S) :

<kzpsa_controller_name> - KZSPA controller name.
Only the parameters for this controller
will be modified.

COMMAND OPTION(S) :

```
-sd          - Set defaults
-offset n    - Selects the byte offset to be modified
-value n     - Gives the new byte value(s), valid only with -offset
-bit n       - Selects the bit to be modified, valid only with -offset
              - -value and -bit are mutually exclusive
-set         - The bit should be set, valid only with -bit
-clear       - The bit should be clear, valid only with -bit
              -set and -clear are mutually exclusive
-p           - print flash contents
```

COMMAND EXAMPLE(S) :

```
Find all KZSPA devices
>>> show config kzpsa*
```

```
Load the kzpsa support code
>>> load -f kzpsa
```

```
List all current FLASH parameters
>>> kzpsa_edit
```

```
Change the host Bus ID from 7 to 6
>>> kzpsa_edit busid kzpsa0
kzpsa0 bus id = 7, new bus id ? 6
```

```
Modify four bytes of parameters
>>> kzpsa_edit -offset 0 -value 11223344 kzpsa0

Set one bit of the parameters
>>> kzpsa_edit -offset 0 -bit 1 -set kzpsa0

Set all defaults
>>> kzpsa_edit -sd kzpsa0
```

There is one other **UNRECOMMENDED** method for updating firmware from an existing CPU's EEPROM. That is the use of the UPDATE command to copy one CPU's EEPROM info to another CPU's EEPROM area. The problem with this command is if the EEPROM format does not match the between the CPU's it may render the new CPU useless. Forewarn any engineer who decides to do this. He may need another spare CPU module.

NEVER Allow a customer to use this procedure!

NOTE: Updating Firmware - Off existing CPU (BEWARE - may render CPU's unusable)

- a. Get settings of the following
Bootdef_dev
Boot_osflags
Auto_action
- b. P02>>> **set CPU #** , where # is the number of the CPU to update from.
- c. P02>>> **update -f KN7cc#** , where # is CPU to update
- d. P02>>> **update -e KN7cc#** , where # is CPU to update
- e. P02>>> **set eeprom serial** and environmental variables.

Other Options available with the update command are

- **-c** Updates only console section of flash.
- **-p** Update only pal section of flash.
- **-r** Updates only the flash rom recover program section of flash.

Compaq AlphaServer GS60/GS140

The console firmware on the Compaq AlphaServer GS60/GS140 systems is located on the CPU module. All Cpu's must run the same version of firmware. You can **NOT** have mixed versions and expect it to work. Any time a CPU module is added or replaced, the firmware will most likely need to be upgraded. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available. The firmware files used for the 8200/8400 and GS60/GS140 are different. Make sure you use the correct file.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off the CDROM, floppy or over the network using LFU command.
- Off CDROM using .iso file and burning your own CD
- Over the network using the .SYS firmware file.
- Off of an infoservert using the Alpha AXP System Firmware Update Utility CD.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- From the BOOTP server (Unix).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision.
- Record all console environmental variables by typing SHOW * at the >>>.
- Determine which method and firmware version will be used to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Locate the appropriate RCU and ECU diskettes if required.
- Boot the firmware file (LFU).
- Use the verify and update commands at the UPD> prompt.
- When done exit from LFU.
- Execute a Build NVR and a Build EEPROM at the >>> for each CPU.
- Init the machine and reboot.
- Run ECU in required.

1. First type INIT at the >>> the see what the current version of console loaded is. It is at the very bottom of the configuration map.

```
P00>>> init
Initializing...
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.f3.f2.f1.f0.
ef.ee.ed.f4
20.21.22.23.24.25.26.27.a2.a4.a5.a7.a8.a9.ec.eb.ea.e9.e8.e7.e6.e5.e3.
F   E   D   C   B   A   9   8   7   6   5   4   3   2   1   0   NODE #
      A   .   .   .   .   M   .   .   .   P   TYP
      O   .   .   .   +   .   .   .   ++  ST1
      .   .   .   .   .   .   .   .   EB  BPD
      O   .   .   .   +   .   .   .   ++  ST2
      .   .   .   .   .   .   .   .   EB  BPD
      +   .   .   .   +   .   .   .   ++  ST3
      .   .   .   .   .   .   .   .   EB  BPD

      +   .   +   .   .   .   +   .   .   .   .   .   .   C0 PCI +
      .   .   .   +   +   .   .   +   +   +   +   .   .   +   C1 PCI +
      .   .   .   .   .   .   .   .   .   .   .   .   .   .   EISA +
      .   .   .   .   .   .   .   .   .   .   .   .   .   .   C2
      .   .   .   .   .   .   .   .   .   .   .   .   .   .   C3
      .   .   .   .   .   .   .   .   .   .   .   .   .   .   256MB
Compaq AlphaServer GS140 2-6/525, Console V5.3-12 15-JAN-1999 12:52:04
SROM V1.1, OpenVMS PALcode V1.44-9, Digital UNIX PALcode V1.41-8
System Serial = tl67, OS = OpenVMS, 15:17:13 February 19, 1999
Configuring I/O adapters. . .
```

2. P00>>> **show *** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.

Bootdef dev
Boot_osflags
Auto_action

a. Set Auto_action to HALT

P00>>> **set Auto_action halt**

3. Boot the firmware using one of the following methods.

Method 1 - Boot the Console CD Off a Local CDROM

SRM Console

a. Insert the CD in the local CDROM. Prior to V5.4 CD the GS60/GS140 had a separate CD that contained only GS firmware.

b. P00>>> **boot -fl 0,a0 DKA600**

Bootfile: **[gs140]gs140_v60.exe** - Unsure of directory as of 05-06-99

UPD> See below for update steps

AlphaBIOS Console

Not valid for the GS Series prior to the V5.4 console version

a. Insert the CD in the local CDROM.

b. Enter the AlphaBIOS menu by typing **ARC** or **AlphaBIOS** or initializing the system when os_type = nt

c. AlphaBIOS - Select **F2** to go into Setup then select **Upgrade AlphaBIOS**

d. LFU will boot. You must tell the firmware where it is loading from, CDA0 (CD) or Ewa0 (network). (DVA0 will not work since the firmware will not fit on a floppy)

e. Then specify the filename to load. There are 3 choices.

GS140FW (CPU and IO),

GS140CP (CPU only)

GS140AB (AlphaBIOS only)

GS140IO (IO only)

Method 2 - Boot Console CD, Firmware Floppy or Network Device

CD

a. Insert the CD in the local CDROM.

b. Execute LFU command and select device cda0 for the CDROM and specify gs140fw.

P00>>> **lfu**

***** Loadable Firmware Update Utility *****

Select firmware load device (cda0, dva0, ewa0), or

Press <return> to bypass loading and proceed to LFU: **cda0**

Please enter the name of the firmware files list, or

Press <return> to use the default filename

[GS140IO,(GS140CP)]: **GS140fw**

Floppy - NT

- a. Fat format 3 floppies.
- b. Copy the following files to floppy 1
 - gsl40fw.sys
 - gsl40cp.sys
 - gsl40ab.sys
 - t6readme.sys
 - t6srmrom.sys
- c. Copy the following files to floppy 2
 - tl6ab.sys
- d. Copy the following files to floppy
 - gsl40fw.sys
 - gsl40io.sys
 - t6readme.sys
 - cipca420.sys
 - cixcd007.sys
 - demfa021.sys
 - demna094.sys
 - dfxaa320.sys
 - kdm70044.sys
 - kfmsb024.sys
 - kzmsa056.sys
 - kzpsaa12.sys
 - ccmab022.sys
- e. Execute LFU command and select device dva0 for the floppy device and the filenames gsl40cp or gsl40io depending if you want to update console or I/O firmware. You can also specify gsl40ab and load only AlphaBIOS code or select gsl40fw and load SRM, AlphaBIOS and option firmware.

```
P00>>> lfu
***** Loadable Firmware Update Utility *****

Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: dva0

Please enter the name of the firmware files list, or
Press <return> to use the default filename
[GS140IO, (GS140CP)]: gs140cp
```

Floppy - OpenVMS

- a. Create a system and/or I/O firmware floppies using the following procedure. You will need up three floppies. Two for system firmware and one for I/O firmware.
- b. Execute the following command file to create both floppies

```
$!  
$! make_gsodscp_1and2.com  
$!  
$ inquire ignore "Insert first blank HD floppy in DVA0, then continue"  
$ set verify  
$ set proc/priv=all  
$ init/density=hd/index=begin dva0: gsods2cp1  
$ mount dva0: gsodscp1  
$ create/directory dva0:[gs140]  
$ copy gs140fw.sys dva0:[gs140]gs140fw.sys  
$ copy gs140cp.sys dva0:[gs140]gs140cp.sys  
$ copy gs140ab.sys dva0:[gs140]gs140ab.sys  
$ copy t6readme.sys dva0:[gs140]t6readme.sys  
$ copy t6srmrom.sys dva0:[gs140]t6srmrom.sys  
$ dismount dva0:  
$ set noverify  
$ inquire ignore "Insert second blank HD floppy in DVA0, then continue"  
$ set verify  
$ set proc/priv=all  
$ init/density=hd/index=begin dva0: gsods2cp2  
$ mount dva0: gsods2cp2  
$ create/directory dva0:[gs140]  
$ copy tl6ab.sys dva0:[gs140]tl6ab.sys  
$ dismount dva0:  
$ set noverify  
$ exit
```

If creating a diskette for updating your I/O option firmware only:

```
$!  
$! make_gsods2io.com  
$!  
$ inquire ignore "Insert blank HD floppy in DVA0, then continue"  
$ set verify  
$ set proc/priv=all  
$ init/density=hd/index=begin dva0: gsods2io  
$ mount dva0: gsods2io  
$ create/directory dva0:[gs140]  
$ create/directory dva0:[options]  
$ copy gs140fw.sys dva0:[gs140]gs140fw.sys  
$ copy gs140io.sys dva0:[gs140]gs140io.sys  
$ copy t6readme.sys dva0:[gs140]t6readme.sys  
$ copy cipca420.sys dva0:[options]cipca420.sys  
$ copy cixcd007.sys dva0:[options]cixcd007.sys  
$ copy demfa021.sys dva0:[options]demfa021.sys  
$ copy demna094.sys dva0:[options]demna094.sys  
$ copy dfxaa320.sys dva0:[options]dfxaa320.sys  
$ copy kdm70044.sys dva0:[options]kdm70044.sys  
$ copy kfmsb024.sys dva0:[options]kfmsb024.sys  
$ copy kzmsa056.sys dva0:[options]kzmsa056.sys  
$ copy kzpsaa12.sys dva0:[options]kzpsaa12.sys  
$ copy ccmab022.sys dva0:[options]ccmab022.sys  
$ dismount dva0:  
$ set noverify  
$ exit
```

- c. Shutdown the OS and init the machine at the P00>>> prompt.

- d. Execute LFU command and select device dva0 for the floppy device and the filenames gs140cp or gs140io depending if you want to update console or I/O firmware. If running console version V1.2 or greater you can specify gs140fw and it will load files off the console firmware floppy and then request you load the I/O firmware floppy.

```
P00>>> lfu
***** Loadable Firmware Update Utility *****

Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: dva0

Please enter the name of the firmware files list, or
Press <return> to use the default filename
[GS140IO,(GS140CP)]: gs140cp
```

Network

- a. Copy the following files to MOM\$LOAD of you local MOP server.
- gs1400cp.sys
 - gs1400ab.sys
 - gs1400fw.sys
 - gs140io.sys
 - t6readme.sys
 - t6srmrom.sys
 - tl6ab.sys
 - cipca420.sys
 - cixcd007.sys
 - demfa021.sys
 - demna094.sys
 - dfxaa320.sys
 - kdm70044.sys
 - kfmsb024.sys
 - kzmsa056.sys
 - kzpsaal2.sys
 - ccmab022.sys
- b. Set the attributes for the file using the following OpenVMS command on each file.
- ```
$ set file/attr=rfm:fix,lrl:512,mrs:512,rat:none filename.sys
```
- c. Execute LFU command and select device EWA0 for Digital PCI Ethernet or FWA0 for Digital PCI FDDI (DEFPA). Specify the files gs140fw, gs140cp, gs140ab or gs140io depending on what you want to update.

```
P00>>> lfu
***** Loadable Firmware Update Utility *****

Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: ewa0

Please enter the name of the firmware files list, or
Press <return> to use the default filename
[GS140IO,(GS140CP)]: gs140fw
```

### Method 3 - Boot the Console CD Off of an Infoserver

- a. Insert CD in the Infoserver
- b. P00>>> **boot exa0 -file gs140\_v60** (leave off the .sys extension)

#### **Method 4 - Create a Bootable CD Using a CD Writer and the .iso Firmware File**

Files in the Alpha Systems Firmware web site that have a ".iso" file type are ISO9660 image files and can be used to create bootable CD-ROMs. ZIP files that have "\_iso" in the file name contain a ".iso" file which, when extracted, can be used to create a bootable CD-ROM.

- a. Make sure you have a CD writer and software package that is capable of creating a CD from an image file.
- b. Obtain the .iso firmware. This may not always be available from the firmware website.

If you use ftp to download, be sure to use binary mode. If you use a browser to download, make sure the browser does not have .iso as a registered file type. If you download a .zip file, extract the .iso file.

- c. Write this image file to a blank CD. When writing the CD, ensure that the "close disk" or equivalent option is selected.

#### **Method 5 - Booting Off the Network**

- a. Copy firmware.sys file to MOM\$LOAD of an existing node in the cluster
- b. Set the attributes on the file with the following commands:  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) gs140\_v60.sys**
- c. Enable service on that node from NCP

```
$ MC NCP
```

```
MC NCP> Show Known Circuit Characteristic
```

```
Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41
```

```
Circuit = BNA-0
```

```
State = on
Service = disabled (if enabled skip to boot command)
Counter timer = 65534
Designated router = 28.1023 (CX028A)
Cost = 4
Maximum routers allowed = 33
Router priority = 64
Hello timer = 15
Type = Ethernet
Adjacent node = 28.1023 (CX028A)
Listen timer = 30
```

```
NCP> Set Circ BNA-0 State OFF - This step will stop network activity
```

```
NCP> Set Circ BNA-0 Service Enable
```

```
NCP> Set Circ BNA-0 State ON
```

- d. P00>>> **b -fl 0,0 EXA0 -fi gs140\_v60**

(Leave off .SYS or node that services request will get an error - **BAD MOP FID**)

Determine device name with SHOW DEVICE at >>> .

DEMNA = EXA0 , DE4x0/DE500 = EWA0, DEMFA = FXA0 , PCI FDDI - FWA0

## Method 6 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

### Non-System Disk

- a. Locate the gs140\_v60.exe
- b. Set the attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:  
\$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) gs140\_v60.exe  
\$ copy/contiguous gs140\_v60.exe "non\_system\_disk":[directory]
- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

#### \$ MCR Writeboot

Update VAX portion of boot block (default is Y): **No**

Update Alpha portion of boot block (default is Y): **Yes**

Target system device (and boot file if not VMB.EXE): \$1\$dua5: [TEMP]gs140\_v60.exe

- d. P02>>> **b -fl 0,0 dua5**

### System Disk

- a. Only steps a and b above are used. Do **NOT** execute writeboot step c.
- b. Specify the flags of 0,a0 a0 and use "system disk":[sys0.sysexec]filename for bootfile.  
>>> **b -fl 0,a0 dua0**  
bootfile: dua0:[sys0.sysexec]gs140\_v60.exe

## Method 7 - BOOTP Network Upgrade - Tru64 UNIX

- a. Mount the Firmware Update CD using the following command:  
# mount -rt cdfs -o noversion /dev/rz4c /mnt
- b. Modify or Create the Client Database in the /etc/bootptab File  
<host>:ht:<hw\_type>:ha=<hw\_addr>:bf=<filename>:ip=<ip\_addr>  
  
where:  
**host** is the system name in /etc/hosts  
  
**hw\_type** is the hardware type. Proteon is ht = 4.  
Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.  
  
**hw\_addr** is the hardware address: use the console command show device.  
  
**filename** is the name of the default bootfile image:  
  
**ip\_addr** is the Internet protocol address of the system name in /etc/hosts.  
  
The following is an example of a bootptab file for the AlphaServer GS140:  
bigsox:ht=1:ha=08002b236423:bf=/mnt/GS140/gs140\_v60.EXE;1:ip=16.182.0.87
- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:  
  
tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt  
bootps dgram udp wait root /usr/sbin/bootpd bootpd
- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**  
# ps aux | grep ine  
# kill process# <ine process number>

- e. Restart the inetd daemon:  
# /usr/sbin/inetd

**Note**

The bootpd and tftp daemon will be removed if the system is rebooted.  
Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

**Use Man bootpd and man tftpd**

- f. Enter the following command to boot from the BOOTP server:

```
>>> boot -p bootp ewa0
```

Should a boot file "pathname" need to be specified in must be in quotes

```
>>> boot -p bootp ewa0 -file "/dir1/dir2/filename"
```

4. Update the firmware at the UPD> prompt.

- a. At the UPD prompt type list to see what versions are loaded (Current Revision) and what versions are available to update (Update Revision).

```
UPD> list
```

| Device        | Current Revision | Filename | Update Revision |
|---------------|------------------|----------|-----------------|
| kn7cg-ab0_arc | V5.68            | arcrom   | V5.68           |
| kn7cg-ab0     | V5.7-5           | kn7cg_fw | V5.8-2          |
| kzpsa0        | A12              | kzpsa_fw | A12             |
| pfi0          | 3.10             | dfxaa_fw | 3.20            |
|               |                  | ccmab_fw | 22              |
|               |                  | cipca_fw | A420            |
|               |                  | cixcd_fw | 7               |
|               |                  | demfa_fw | 2.1             |
|               |                  | demna_fw | 9.4             |
|               |                  | kdm70_fw | 4.4             |
|               |                  | kfmsb_fw | 2.4             |
|               |                  | kzmsa_fw | 5.6             |

- b. Update the firmware using one of the following commands.

```
UPD> Update * or Update - Update all supported devices
```

WARNING: updates may take several minutes to complete for each device.

```
Confirm update on: kn7cg-ab0_arc [Y/(N)] y
```

```
DO NOT ABORT!
```

```
kn7cg-ab0_arc Updating to V5.68... Verifying V5.68... PASSED.
```

```
Confirm update on: kn7cg-ab0 [Y/(N)] y
```

```
DO NOT ABORT!
```

```
kn7cg-ab0 Updating to V5.8-2... Verifying V5.8-2... PASSED.
```

```
Confirm update on: kzpsa0 [Y/(N)] n
```

```
Confirm update on: pfi0 [Y/(N)] n
```

```
UPD> Update KN7CG* - Update all KN7CG CPUs. Can substitute a number for
the * to update a specific CPU.
```

```
Confirm update on: kn7cg-ab0_arc [Y/(N)] y
```

```
DO NOT ABORT!
```

```
kn7cg-ab0_arc Updating to V5.68... Verifying V5.68... PASSED.
```

```
Confirm update on: kn7cg-ab0 [Y/(N)] y
```

```
DO NOT ABORT!
```

```
kn7cg-ab0 Updating to V5.8-2... Verifying V5.8-2... PASSED.
```

```
UPD> Update PFIO - Update DEC PCI FDDI (DEFPA) only. Can specify other
```

devices.

WARNING: updates may take several minutes to complete for each device.

Confirm update on: pfi0 [Y/(N)] **y**

DO NOT ABORT!

pfi0 Updating to 3.20... Verifying 3.20... PASSED.

c. After you have updated the firmware type `verify` to check the update

```
UPD> verify
kn7cg-ab0_arc Verifying V5.68... PASSED.
kn7cg-ab0_ Verifying V5.8-2... PASSED.
kzpsa0 Verifying A12... PASSED.
pfi0 Verifying 3.20... PASSED.
```

d. Type `Exit` to leave the utility.

```
UPD> exit
Initializing...
```

5. After you have updated the firmware you **MUST FORMAT THE EEPROMs** to the new console firmware format.

**Note**

This process will require you to re-enter your default boot specifications and EWx0\_mode EV settings after you have re-initialized.  
**BE SURE TO RECORD THE CURRENT SETTINGS BY TYPING SHOW \* BEFORE REFORMATTING THE EEPROMS.**

a. Show environmental variables using console `SHOW` command.

```
P00>>> show *
```

b. The build `-e` command is used to format the CPUs EEPROMs. Prior to console version V5.2 you will need to execute a `SET CPU #` ( # = cpu number) to each CPU before executing this command. With console version V5.2 all CPUs EEPROMs will be built using the build command once. If the `SET CPU` command fails, you will need to modify the console variables `CPU_ENABLED` and `CPU_PRIMARY` to select the specific CPU. These variables are a bit mask. One bit for each CPU. CPU 0 = bit 0, CPU 1 = bit 1 etc. Just clear bits of CPUs you want to disable and `INIT`. Set the variable back to `FFFF` when finished.

All Compaq AlphaServer GS60/GS140 uses dual CPU modules. The CPUs are numbered based on the slot they are plugged into.

```
CPU0/CPU1 Slot 0
CPU2/CPU3 Slot 1
CPU4/CPU5 Slot 2
CPU6/CPU7 Slot 3
CPU8/CPU9 Slot 4
CPU10/CPU11 Slot 5
CPU12/CPU13 Slot 6
```

```
P00>>> set cpu 0
```

```
P00>>> build -e
```

```
Build EEPROM on kn7cg-ab0 ? [Y/N]> y
```

```
EEPROM built on kn7cg-ab0
```

```
P00>>> set cpu 2 - note prompt changed to P02>>> to indicate CPU 2.
```

```
P02>>> build -e
Build EEPROM on kn7cg-ab2 ? [Y/N]> y
```

EEPROM built on kn7cg-ab2

The build -e command may prompt you for a system serial number and module part number.

```
P00>>> build -e
Build EEPROM on kn7cg-ab0 ? [Y/N]> y
Please input module information for CPU module in slot 0
Module Serial Number> AY80973463
Module Unified 2-5-2.4 Part Number> 00-E2063-DA.C02
```

EEPROM built on kn7cg-ab0

- c. The build -n command is used to format the NVR (non-volatile RAM) . This command is not documented in the release notes. It is valid and may correct problems after the update. You must do this on each cpu.

```
P00>>> build -n
Build NVR on kn7cg-ab0 ? [Y/N]> y
```

NVR built on kn7cg-ab0

- d. Set console environmental variables back to original settings as necessary.

```
P00>>> Set bootdef_dev dka0.0.0.1.0
P00>>> Set boot_osflags 0,0
P00>>> Set ewa0_mode twisted-pair
```

- e. P02>>> **init**

6. Before attempting to run these utilities make sure the following console environmental variables are set as follows:

**Console\_mode**    **Advanced**    - Defines MODE setting on INIT.  
                                 Overrides SET MODE command after INIT.  
**Arc\_enable**       **ON**       - Will make specific variable used below available to you.  
                                 Variables like RCU, SWXCRMGR ECU and EEROMCFG are some.

```
P00>>>sho console_mode
console_mode BASIC
P00>>>sho mode
Console is in basic mode
P00>>>sho arc_enable
arc_enable ON
P00>>> set console_mode advanced
P00>>> show arc_enable
arc_enable OFF
P00>>> set arc_enable on
P00>>> init
```

- a. On systems with an EISA bus you will need to run the EISA Configuration Utility (ECU) whenever the configuration is changed by adding, removing or moving EISA modules. There are 2 versions of the program. One version for WNT and one version for Alphas running OpenVMS or Tru64 UNIX. After a firmware upgrade if the configuration does not change you will need to run ECU and the Save and Exit.

Certain minimum versions of ECU are required with specific console versions. ECU version 1.10 is available on Cybrary at <http://Cybrary.inet.cpqcorp.net/DOWNLOAD/UTILITIES/SYSTEM/contents.html#ECU>.

```
P00>>>sho ecu
ECU fat:cf.exe
P00>>>runecu
Loading image...
```

Transferring control...

7. The RUN command has 4 options.

**Rcu** - Run the RAID Configuration Utility  
**swxcrfw** - Update the firmware on the RAID controller  
**eeromcfg** - Run the ISP1020 EEPROM Configuration Utility (KFTIA and other  
ISP1020 Controllers i.e. KZPBA )  
**util cli** - Run the KZPSA Configuration Utility  
**lp6ldr** - KGPSA firmware update utility

RCU and SWXCRFW are on floppy and require a floppy drive. RCU is also on the CD. EEROMCFG and UTIL\_CLI are available on floppy or CD.

a. If RCU is required to be run you must set ARC\_ENABLE ON.

```
P02>>> set arc_enable on
P02>>> set console_mode advanced
P02>>> init
P02>>> run rcu -p 1 (-p 1 specifies PCI bus 1) or to update firmware
P02>>> run swxcrfw -p 1 -s "swxcrfwp.236" (V3.8 CD or less)
P02>>> run ra200f1 -p 1 -s "swxcrfwp.242" (V3.9 CD)
-p specifies the PCI bus
-s specifies "parameter string" or file to load
```

b. If the ISP1020 EEPROM Configuration Utility is required.

```
P02>>> show device isp3 ! use SHOW DEVICE to find CD-ROM drive
```

```
polling for units on isp3, slot 5, bus 0, hose0...
dkd400.4.0.5.0 DKD400 RRD44 0064
dkd500.5.0.5.0 DKD500 RZ26L 440C
```

```
P02>>> run eeromcfg -d dkd400 -p 0
-d dkd400 - specifies device where utility is located (CDROM)
-p 0 - specifies PCI bus where option is installed
```

Or

```
P02>>> Run ISO9660:[utility]eeromcfg.exe -d dkd0 -p 0
```

```
Loading image...
Transferring control...
```

The screen is erased, followed by

```

ISP1020 EEROM Configuration Utility V1.1

```

| +===== Select ISP1020 =====+ |              |            |
|------------------------------|--------------|------------|
| Bus                          | Virtual Slot | Address    |
| [ 0                          | 0            | 01003000]  |
| 0                            | 1            | 01002000   |
| 0                            | 4            | 01001000   |
| 0                            | 5            | 01000000   |
| -----                        |              |            |
| < (O)K >                     |              | < E(x)it > |
|                              |              |            |

On CDs V3.5 and earlier use

```
P02>>> run iso9660:[CDROM.UTILITY] eeromcfg.exe -d dkd500 -p 0
```

c. If the KZPSA Configuration Utility is required to be run

```
P02>>> set arc_enable on
P02>>> set console_mode advanced
P02>>> init
P02>>> load -f iso9660 - load CDROM driver
P02>>> run iso9660:[UTILITY]UTIL_CLI.EXE -d dkd500 -p 0
(specify CD loaded into DKD500 on PCI bus 0)
```

On CDs V3.5 and earlier use

```
P02>>> run iso9660:[CDROM.UTILITY]UTIL_CLI.EXE -d dkd500 -p 0
```

d. If updates to KGPSA firmware are required

```
P02>>> set arc_enable on
```

```
P02>>> set console_mode advanced
```

```
P02>>> init
```

```
P02>>> load -f iso9660 - load CDROM driver
```

```
P02>>> run iso9660:[UTILITY]lp6ldr.exe -d dkd500 -p 0
(specify CD loaded into DKD500 on PCI bus 0)
```

The utility lp6dutil will not properly function on the TurboLaser or GS series machine thru the serial port. You will see a repeating character problem.

8. You can also run KZPSA\_EDIT from the console prompt to set up some KZPSA parameters.

kzpsa\_edit - Edit KZPSA FLASH parameters.

OVERVIEW:

The kzpsa\_edit command permits the modification of KZPSA Flash parameters from the console. Individual bits can be set or cleared, or bytes can be set to a specific value. Entering kzpsa\_edit without an option or target device will list these parameters for all KZPSA devices in the system.

```
kzpsa_edit ([busid] [<kzpsa_controller_name>]
 [fast]
 [termpwr]
 [-sd]
 [-offset n] [-value n]
 [-bit n] [-set]
 [-clear])
 [-p]
```

COMMAND ARGUMENT(S) :

```
<kzpsa_controller_name> - KZPSA controller name.
 Only the parameters for this controller
 will be modified.
```

COMMAND OPTION(S) :

```
-sd - Set defaults
-offset n - Selects the byte offset to be modified
-value n - Gives the new byte value(s), valid only with -offset
-bit n - Selects the bit to be modified, valid only with -offset
 - -value and -bit are mutually exclusive
-set - The bit should be set, valid only with -bit
-clear - The bit should be clear, valid only with -bit
 -set and -clear are mutually exclusive
-p - print flash contents
```

COMMAND EXAMPLE(S) :

Find all KZPSA devices

```
>>> show config kzpsa*
```

Load the kzpsa support code

```
>>> load -f kzpsa
```

List all current FLASH parameters

```
>>> kzpsa_edit
```

Change the host Bus ID from 7 to 6



```
>>> kzpsa_edit busid kzpsa0
kzpsa0 bus id = 7, new bus id ? 6

Modify four bytes of parameters
>>> kzpsa_edit -offset 0 -value 11223344 kzpsa0

Set one bit of the parameters
>>> kzpsa_edit -offset 0 -bit 1 -set kzpsa0

Set all defaults
>>> kzpsa_edit -sd kzpsa0
```



## Compaq AlphaServer GS80/GS160/GS320

The AlphaServer GS80/GS160/GS320 has an SRM console located on every standard I/O module in the PCI box/boxes. It also has five different micro firmwares on four different modules. All micros in the machine must be the same version. There are also failsafe loaders on the modules. These are only to be updated in the factory. You can **NOT** have mixed versions and expect it to work. Any time a module with micro firmware or SRM code is replaced, the firmware will most likely need to be upgraded. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available.

There are several ways to upgrade the firmware.

- Off CDROM using the Alpha Systems Firmware Update CD V5.9 minimum
- Off the CDROM using an Infoserver
- Off a CDROM created using the .iso firmware file and a CD R/W drive.
- Over the network using the .SYS firmware file.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- From the BOOTP server (Unix).
- Using the SCM update command and using specific rom.hex files

### LFU Firmware Update Procedure

- Determine current console firmware revision.
  - o P00>>> SHOW FIRMWARE
  - o SCM\_E0> SHOW CSB
- Save the contents of all SRM console variables
  - o >>> SHOW \*
- Remove soft partitions if there are any.
  - o >>> SET LP\_COUNT 0
  - o >>> INIT
- Enter the SCM console using the escape sequence. If you do not know the sequence use the SRM command
  - o >>> SCM SHOW STATUS
    - SCM escape sequence : [ESC] [ESC] scm or ^^[scm
  - o ^^[scm
- From the SCM prompt show NVR and save contents.
  - o SHOW NVR
- From the SCM prompt remove hard partitions
  - o SET HP\_COUNT 0
- Disable SROM and XSROM diagnostics to shorten power up time. Be sure to restore these to FULL when finished. **This step is NOT required.**
  - o SET SROM\_MASK PARTIAL
  - o SET XSROM\_MASK PARTIAL
- Set the variable DIMM\_READ\_DIS to a 1 to shorten power up time. Be sure to restore this to 0 (zero) when finished. **This step is NOT required.**
  - o SET DIMM\_READ\_DIS 1
- Reset or Power OFF/ON the system to allow the new HP\_COUNT value to take affect.
  - o RESET
- Determine which method and firmware version will be used to do the update.
- Print the firmware release notes for that version.
- Determine if any option firmware will be upgraded.
- Boot the firmware file using one of the following methods.
- Use the list, update and verify commands at the UPD> prompt.
- Once the CD boots you will come to the UPD> prompt. You can type LIST to see current and update versions and UPDATE to update to the version you loaded.
  - o UPD> LIST

- UPD> UPDATE
    - Answer "Y" to update all devices including SRM and micros
- When the update completes you will be at the SCM> prompt. Execute a BUILD EEPROM command from each SCM console.
  - SCM\_E0> BUILD EEPROM
  - SLV\_E1> BUILD EEPROM
  - etc.
- Reset SCM NVR settings to original settings.
- Power on the system
- Reset SRM console variable as necessary.
- Init the machine and reboot.

1. Determine the current firmware version by using the show firmware command from the >>> prompt or show csb from the SCM> prompt. This command is not available until SRM V5.8-121.

P00>>> **show firmware**

```
SRM Console V5.9-111, built on Jan 9 2001 at 15:21:06
PALcode OpenVMS PALcode V1.90-1, Tru64 UNIX PALcode V1.86-1
Micro Firmware V5.9
QBB0.PSM PSM V5.9|PSM FS V5.6|XSROM V5.9
QBB0.CPU0 SROM V6.0-7
PBP0.SIO SCM V5.9|SCM FS V5.6|SRM V5.9-111
PBP0.SIO SCM V5.9|SCM FS V5.6|SRM V5.9-111
QBB1.PSM PSM V5.9|PSM FS V5.6|XSROM V5.9
QBB1.CPU0 SROM V6.0-7
PBP1.SIO SCM V5.9|SCM FS V5.6|SRM V5.9-111
QBB2.PSM PSM V5.9|PSM FS V5.6|XSROM V5.9
QBB2.CPU2 SROM V6.0-7
QBB3.PSM PSM V5.9|PSM FS V5.6|XSROM V5.9
QBB3.CPU1 SROM V6.0-7
HSW4 HPM V5.7|HPM FS V5.6
```

SCM\_E0> **sho csb**

| CSB Type      | Firmware Revision   | FSL Revision | Power State |          |
|---------------|---------------------|--------------|-------------|----------|
| 10 PBM        | V05.9 (01.09/14:51) | V5.6 (05.31) | ON          |          |
| 11 PBM        | V05.9 (01.09/14:51) | V5.6 (05.31) | ON          |          |
| 30 PSM        | V05.9 (01.09/14:51) | V5.6 (05.31) | ON          | SrvSw:   |
| NORMAL        |                     |              |             |          |
| 30 XSROM      | V05.9 (01.09/13:37) |              |             |          |
| C0 CPU0/SROM  | V6.0-7              |              | ON          |          |
| C0 IOR0       |                     |              | ON          |          |
| C1 IOR1       |                     |              | ON          |          |
| 31 PSM        | V05.9 (01.09/14:51) | V5.6 (05.31) | ON          | SrvSw:   |
| NORMAL        |                     |              |             |          |
| 31 XSROM      | V05.9 (01.09/13:37) |              |             |          |
| C4 CPU0/SROM  | V6.0-7              |              | ON          |          |
| C4 IOR0       |                     |              | ON          |          |
| C5 IOR1       |                     |              | ON          |          |
| 32 PSM        | V05.9 (01.09/14:51) | V5.6 (05.31) | ON          | SrvSw:   |
| NORMAL        |                     |              |             |          |
| 32 XSROM      | V05.9 (01.09/13:37) |              |             |          |
| CA CPU2/SROM  | V6.0-7              |              | ON          |          |
| 33 PSM        | V05.9 (01.09/14:51) | V5.6 (05.31) | ON          | SrvSw:   |
| NORMAL        |                     |              |             |          |
| 33 XSROM      | V05.9 (01.09/13:37) |              |             |          |
| CD CPU1/SROM  | V6.0-7              |              | ON          |          |
| 40 HPM        | V05.7 (08.11/02:08) | V5.6 (05.31) | ON          |          |
| E0 SCM MASTER | V05.9 (01.09/14:52) | V5.6 (05.31) | ON          |          |
| E1 SCM SLAVE  | V05.9 (01.09/14:52) | V5.6 (05.31) | ON          | Eligible |

2. P00>>> **show \*** to printout all the SRM environmental variables. Check all customer set variables. Also verify the setting of the following variables.

```

 Bootdef dev
 Boot_osflags
 Auto_action
 All the "lp" variables

```

- a. Set Auto\_action to HALT  
P00>>> **set Auto\_action halt**

3. Print out all SCM NVRAM console variables using the show nvr command from SCM>.

```

SCM_E0> show nvr
COM1_PRINT_EN 1
HP_COUNT 0
HP_QBB_MASK0 1
HP_QBB_MASK1 a
HP_QBB_MASK2 0
HP_QBB_MASK3 0
HP_QBB_MASK4 0
HP_QBB_MASK5 0
HP_QBB_MASK6 0
HP_QBB_MASK7 0
SR0M_MASK ff f
XSROM_MASK ff ff ff ff ff ff ff ff eb 1 0 0
PRIMARY_CPU ff
PRIMARY_QBB0 ff
AUTO_QUIT_SCM 1
FAULT_TO_SYS 0
DIMM_READ_DIS 0
SCM_CSB_MASTER_ELIGIBLE 1
PERF_MON 0
SCM_FORCE_FSL 0
OCP_TEXT Uninitialized
AUTO_FAULT_RESTART 1
SCM_SIZING_TIME 14
SYS_CPU_MASK FFFFFFFF
SYS_MEM_MASK FFFFFFFF
SYS_IOR_MASK FFFFFFFF
SYS_PCI_MASK FFFF
SYS_QBB_MASK FF

```

4. Set HP\_COUNT and LP\_COUNT to 0 and power off/on the machine

```

P00>>> set lp_count 0
SCM_E0> set hp_count 0
SCM_E0> power off
SCM_E0> power on

```

5. Boot the firmware using one of the following methods.

#### **Method 1 - Load the Console Firmware Off a Local CDROM**

##### **SRM Console**

- a. Insert the CD in the local CDROM.
- b. >>> **Boot -fl 0,a0 DKA400**  
 BOOTFILE: **[gs320]gs320\_v61.exe**  
**Note:** These filenames will change with different console versions.  
 UPD> See step 5 below for update procedure.

#### **Method 2 - Boot the Console CD Off of an Infoserver**

- a. Insert CD in the Infoserver
- b. >>> **boot eia0 -file filename** (leave off the .sys extension)

### Method 3 - Create a Bootable CD Using a CD Writer and the .iso Firmware File

Files in the Alpha Systems Firmware web site that have a ".iso" file type are ISO9660 image files and can be used to create bootable CD-ROMs. ZIP files that have "\_iso" in the file name contain a ".iso" file which, when extracted, can be used to create a bootable CD-ROM.

- a. Make sure you have a CD writer and software package that is capable of creating a CD from an image file.
- b. Obtain the .iso firmware from the interim website at <http://ftp.digital.com/pub/Digital/Alpha/firmware/interim/gs320>  
If you use ftp to download, be sure to use binary mode. If you use a browser to download, make sure the browser does not have .iso as a registered file type. If you download a .zip file, extract the .iso file.
- c. Write this image file to a blank CD. When writing the CD, ensure that the "close disk" or equivalent option is selected.

### Method 4 - Booting off the Network - OpenVMS

- a. Copy firmware.sys file to MOM\$LOAD of an existing node in the cluster
- b. Set the attributes on the file with the following commands:  

```
$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.sys
```
- c. Enable service on that node from NCP  

```
$ MC NCP
MC NCP> Show Known Circuit Characteristic
Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

Circuit = BNA-0 - Circuit name will change from system to system
State = on
Service = disabled (if enabled skip to boot command)
Counter timer = 65534
Designated router = 28.1023 (CXO28A)
Cost = 4
Maximum routers allowed = 33
Router priority = 64
Hello timer = 15
Type = Ethernet
Adjacent node = 28.1023 (CXO28A)
Listen timer = 30

NCP> Set Circ BNA-0 State OFF - This step will stop network activity
NCP> Set Circ BNA-0 Service Enable
NCP> Set Circ BNA-0 State ON
```
- d. >>> **b eia0 -fi filename**  
Leave off .SYS or node that services request will get an error - BAD MOP FID)

### Method 5 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

#### **Non-System Disk**

- a. Locate the firmware.exe file
- b. Set the attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:  

```
$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.exe
$ copy/contiguous firmware.exe "non_system_disk":[directory]
```
- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.  

```
$ MCR Writeboot
```

Update VAX portion of boot block (default is Y): **No**  
Update Alpha portion of boot block (default is Y): **Yes**  
Target system device (and boot file if not VMB.EXE): **\$1\$DUA5:[TEMP]gs320\_v61.exe**

d. >>> **b -fl 0,0 dua5**

#### System Disk

- a. Only steps a and b above are used. Do NOT execute writeboot step c.
- b. Specify the flags of 0,a0 and use "system\_disk":[sys0.sysexec]filename for bootfile.

```
>>> boot -fl 0,a0 dua0
bootfile: dua0:[sys0.sysexec]gs320_v61.exe
```

#### Method 6 - BOOTP Network Upgrade - Tru64 UNIX

- a. Mount the Firmware Update CD using the following command:  
**# mount -rt cdfs -o noversion /dev/rz4c /mnt**
- b. Modify or Create the Client Database in the /etc/bootptab File  
**<host>:ht:<hw\_type>:ha=<hw\_addr>:bf=<filename>:ip=<ip\_addr>**  
  
where:  
**host** is the system name in /etc/hosts  
  
**hw\_type** is the hardware type. Proteon is ht = 4.  
Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.  
  
**hw\_addr** is the hardware address: use the console command show device.  
  
**filename** is the name of the default bootfile image:  
  
**ip\_addr** is the Internet protocol address of the system name in /etc/hosts.  
  
The following is an example of a bootptab file for the AlphaServer 300  
bigsox:ht=1:ha=08002b236423:bf=/mnt/GS320/gs320\_v61.EXE;l:ip=16.182.0.87
- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:  
  
tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt  
bootps dgram upd wait root /usr/sbin/bootpd bootpd
- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**  
**# ps aux | grep ine**  
**# kill process# <ine process number>**
- e. Restart the inetd daemon:  
  
**# /usr/sbin/inetd**

#### **Note**

The bootpd and tftpd daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

**Use Man bootpd and man tftpd**

- f. Enter the following command to boot from the BOOTP server:  
**>>> boot -p bootp ewa0**

Should a boot file "pathname" need to be specified in must be in quotes  
**>>> boot -p bootp ewa0 -file "/dir1/dir2/filename"**

6. At the UPD> prompt type list to see current and update versions. Then execute the update command.

\*\*\*\*\* Loadable Firmware Update Utility \*\*\*\*\*

-----  
Function Description  
-----

Display Displays the system's configuration table.  
Exit Done exit LFU (reset).  
List Lists the device, revision, firmware name, and update revision.  
Readme Lists important release information.  
Update Replaces current firmware with loadable data image.  
Verify Compares loadable and hardware images.  
? or Help Scrolls this function table.  
-----

UPD> **list**

| Device | Current Revision  | Filename    | Update Revision   |
|--------|-------------------|-------------|-------------------|
| SRM18  | v5.9-111          | srn_fw      | v6.1-1011         |
| SRM24  | v5.9-111          | srn_fw      | v6.1-1011         |
| SRM8   | v5.9-111          | srn_fw      | v6.1-1011         |
| SRM    | v5.9-111          | srn_fw      | v6.1-1011         |
| micro  | V5.9(01.09/14:52) | micro_fw    | V6.1(10.11/13:32) |
| pua0   | A420              | cipca_fw    | A420              |
| fwa0   | 3.20              | dfxaa_fw    | 3.20              |
| pga0   | SS3.03A1          | kgpsa_7k_fw | SS3.03A1          |
| pgb0   | SS3.03A1          | kgpsa_7k_fw | SS3.03A1          |
| pgc0   | SS3.03A1          | kgpsa_7k_fw | SS3.03A1          |
| pgd0   | DS3.03X2          | kgpsa_8k_fw | DS3.81A4          |
| pge0   | DS3.03X2          | kgpsa_8k_fw | DS3.81A4          |
|        |                   | kzpsa_fw    | A12               |

UPD> **update \***

Confirm update on:

SRM18  
SRM24  
SRM8  
SRM  
fwa0  
pga0  
pgb0  
pgc0  
pgd0  
pge0  
pua0  
micro

[Y/(N)]**y**

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

|       |                          |                        |         |
|-------|--------------------------|------------------------|---------|
| SRM18 | Updating to v6.1-1011... | Verifying v6.1-1011... | PASSED. |
| SRM24 | Updating to v6.1-1011... | Verifying v6.1-1011... | PASSED. |
| SRM8  | Updating to v6.1-1011... | Verifying v6.1-1011... | PASSED. |
| SRM   | Updating to v6.1-1011... | Verifying v6.1-1011... | PASSED. |



```

fwa0 Updating to 3.20... Verifying 3.20... PASSED.
pga0 Updating to SS3.03A1... Verifying SS3.03A1... PASSED.
pgb0 Updating to SS3.03A1... Verifying SS3.03A1... PASSED.
pgc0 Updating to SS3.03A1... Verifying SS3.03A1... PASSED.
pgd0 Updating to DS3.81A4... Verifying DS3.81A4... PASSED.
pge0 Updating to SS3.03A1... Verifying SS3.03A1... PASSED.
pua0 Updating to A420... Verifying A420... PASSED.
micro Updating to V6.1(10.11/13:32)...

```

```

Updating SCM nodes E0,E1,E2,E3
Update Cmd processed
Transferring hex file.....Flash ON.....Flash ON.....Flash
ON.....Flash ON.....Flash ON.

```

```

Initializing shared ram
Modified SR init-SCM previously ON, 07
Shared RAM Initialized
Master SCM
Testing SCM EEPROM - Passed
Initializing EVs
SCM Selftest Passed
Polling CSB.....SCM_E0> PS1 in PBP0 added
PS2 in PBP0 added
Remote IOR0 added to PBP0
Remote IOR1 added to PBP0
SCM_E0> PS1 in PBP1 added
PS2 in PBP1 added
Remote IOR0 added to PBP1
Remote IOR1 added to PBP1
SCM_E0> PS1 in PBP2 added
PS2 in PBP2 added
Remote IOR0 added to PBP2
Remote IOR1 added to PBP2
SCM_E0> PS1 in PBP3 added
PS2 in PBP3 added
Remote IOR0 added to PBP3
Remote IOR1 added to PBP3
SCM_E0> QBB0 Directory Module Added
Power Supply-1 present in Subrack-1
Power Supply-2 present in Subrack-1
Power Supply-3 present in Subrack-1
QBB0 3.3V Main Power Converter present
QBB0 3.3V AUX Converter present
QBB0 GP added
MEM0 added to QBB0
MEM1 added to QBB0
MEM2 added to QBB0
MEM3 added to QBB0
IOR01 added in QBB0
CPU0 added to QBB0
CPU1 added to QBB0
CPU2 added to QBB0
CPU3 added to QBB0
SCM_E0> QBB1 Directory Module Added
Power Supply-1 present in Subrack-1
Power Supply-2 present in Subrack-1
Power Supply-3 present in Subrack-1
QBB1 3.3V Main Power Converter present
QBB1 3.3V AUX Converter present
QBB1 GP added

```

```

MEM0 added to QBB1
MEM1 added to QBB1
MEM2 added to QBB1
MEM3 added to QBB1
IOR01 added in QBB1
CPU0 added to QBB1
CPU1 added to QBB1
CPU2 added to QBB1
CPU3 added to QBB1
SCM_E0> QBB2 Directory Module Added
Power Supply-1 present in Subrack-2
Power Supply-2 present in Subrack-2
Power Supply-3 present in Subrack-2
QBB2 3.3V Main Power Converter present
QBB2 3.3V AUX Converter present
QBB2 GP added
MEM0 added to QBB2
MEM1 added to QBB2
MEM2 added to QBB2
MEM3 added to QBB2
IOR01 added in QBB2
CPU0 added to QBB2
CPU1 added to QBB2
CPU2 added to QBB2
CPU3 added to QBB2
SCM_E0> QBB3 Directory Module Added
Power Supply-1 present in Subrack-2
Power Supply-2 present in Subrack-2
Power Supply-3 present in Subrack-2
QBB3 3.3V Main Power Converter present
QBB3 3.3V AUX Converter present
QBB3 GP added
MEM0 added to QBB3
MEM1 added to QBB3
MEM2 added to QBB3
MEM3 added to QBB3
IOR01 added in QBB3
CPU0 added to QBB3
CPU1 added to QBB3
CPU2 added to QBB3
CPU3 added to QBB3
SCM_E0> PS1 in HS0 added
PS2 in HS0 added
GP0 Cable Present
GP1 Cable Present
GP2 Cable Present
GP3 Cable Present
SCM_E0> OCP will be inactive for first 20 seconds after micro reset

```

~E~ EEPROM VERSION MISMATCH. Execute Build EEPROM Cmd

```

SCM_E0>
Querying the modem port...no device detected
SCM_E0> OCP switch is now active and operational
Slave10 already ON or transitioning to ON
Slave11 already ON or transitioning to ON
Slave12 already ON or transitioning to ON
Slave13 already ON or transitioning to ON
Slave30 already ON or transitioning to ON
Slave31 already ON or transitioning to ON
Slave32 already ON or transitioning to ON
Slave33 already ON or transitioning to ON
Slave40 already ON or transitioning to ON
SCM_E0>
Returning to system COM1 port

```

Updating XSROM nodes 30,31,32,33

```

Update Cmd processed
Transferring hex file.....
~I~ Flashing node 30 (please wait)
~I~ Flashing node 31 (please wait)
~I~ Flashing node 32 (please wait)
~I~ Flashing node 33 (please wait)
CSB download of .Hex file complete

```

```

Updating HPM node 40
Update Cmd processed
Transferring hex file.....
CSB download of .Hex file complete

```

```

Updating PSM nodes 30,31,32,33
Update Cmd processed
Transferring hex file.....
CSB download of .Hex file complete

```

```

Updating PBM nodes 10,11,12,13
Update Cmd processed
Transferring hex file.....
CSB download of .Hex file complete
The Master SCM will now finish the micro flash updates to each CSB node.
After the update is complete, you will be returned to the SCM CLI.
last flash packet to 30
last flash packet to 31
last flash packet to 32
last flash packet to 33
last flash packet to 10
last flash packet to 11
last flash packet to 12
last flash packet to 13
last flash packet to 40

```

Please wait. System will complete power off in approximately 20 seconds

```

Local escape sequence verified
SCM_E0>
~E~ CSB Node 40 connection lost

~E~ CSB Node 40 is no longer connected!
SCM_E0> Remote IOR2 added to PBP0
Remote IOR3 added to PBP0
SCM_E0> Remote IOR2 added to PBP1
Remote IOR3 added to PBP1
SCM_E0> Remote IOR2 added to PBP2
Remote IOR3 added to PBP2
SCM_E0> Remote IOR2 added to PBP3
Remote IOR3 added to PBP3
SCM_E0>
~I~ CSB Node 40 connection added
SCM_E0>
~I~ The SYSTEM will now power off
Powering off PCI Box 0
Powering off PCI Box 1
Powering off PCI Box 2
Powering off PCI Box 3
Slave30 already OFF or transitioning to OFF
Slave31 already OFF or transitioning to OFF
Slave32 already OFF or transitioning to OFF
Slave33 already OFF or transitioning to OFF
Slave40 already OFF or transitioning to OFF
SCM_E0> .

```

Firmware Update is now complete. If you require a partitioned system, please set your HP\_COUNT and 'POWER ON -ALL'. For non-partitioned systems enter 'POWER ON'

7. At the SCM prompt show the NVR variables and then execute the build eeprom command.

```
SCM_E0> sho nvr
SCM_E0> build eeprom
Restoring EEPROM Defaults
Maintaining local baud at 9600
Maintaining local flow at soft
Maintaining modem baud at 9600
Maintaining modem flow at hard
Maintaining COM1 baud at 9600
Maintaining COM1 flow at soft
Maintaining HP_QBB_MASKs
```

8. Set any nvram variable that was reset or cleared and power on the machine

```
SCM_E0> set hp_count #
SCM_E0> power on
```

9. After SRM loads set the lp srm variables as necessary.

```
P00>>> set lp_count #
P00>>> init
```

## Errors

- If a firmware update is attempted with `hp_count` set to a value other than 0 (system hard partitioned), it will not load micros and you will get an error message.

LFU micro updates are not supported when the system is hard partitioned.  
Please power down and unpartition first.

```
***** Loadable Firmware Update Utility *****
```

| Function  | Description                                                     |
|-----------|-----------------------------------------------------------------|
| Display   | Displays the system's configuration table.                      |
| Exit      | Done exit LFU (reset).                                          |
| List      | Lists the device, revision, firmware name, and update revision. |
| Update    | Replaces current firmware with loadable data image.             |
| Verify    | Compares loadable and hardware images.                          |
| ? or Help | Scrolls this function table.                                    |

UPD> **list**

| Device   | Current Revision | Filename    | Update   |
|----------|------------------|-------------|----------|
| Revision |                  |             |          |
| SRM      | v5.8-1           | srm_fw      | v5.8-1   |
|          |                  | cipca_fw    | A420     |
|          |                  | dfxaa_fw    | 3.20     |
|          |                  | kgpsa_7k_fw | SS2.20X2 |
|          |                  | kgpsa_8k_fw | DS3.02A1 |
|          |                  | kzpsa_fw    | A12      |

UPD>

- You must reset or power cycle the machine after changing `HP_COUNT` to 0. If this is not done you may see an error message similar to the following.

```
Checking dqa0.0.0.15.26 for the option firmware files. . .
Copying DFXAA320 from dqa0.0.0.15.26. . .
Copying KZPSAA12 from dqa0.0.0.15.26. . .
Copying CIPCA420 from dqa0.0.0.15.26. . .
Copying KG8302A1 from dqa0.0.0.15.26. . .
Copying KG7220X2 from dqa0.0.0.15.26. . .
```

Slave SCM E1 has no hose connection

LFU micro updates are not supported when the system is in this condition.

Verify with `show system` that all QBBs Par columns are (-) and that the switch shows "P" for all ports. You should not have a "V" in a non-partitioned system.

- If `lp_count` is set to a non-zero value firmware updates will not continue. You can select the boorfile but then get the following message

cannot load a new console on a partitioned system  
proceeding will cause the system to be unpartitioned automatically

At this point the SRM console hangs and a system reset must be done.

- If the EEPROM needs to be reset the follow message is printed out  
~E~ EEPROM VERSION MISMATCH. Execute Build EEPROM Cmd

## **Method 6 - SCM Update**

### **Laptop system setup**

When the SCM update command is used, firmware update files are downloaded from some source to the master SCM module. To perform the update from a laptop, the COM1 port of the laptop must be set appropriately. the following table shows the settings for four versions of the Windows operating system. These Setting must be exact to function properly.

| <b>COM1 Port Settings</b>    | <b>Windows 95 and 98</b>                                                                                            | <b>Windows 2000</b>                                                                                                               | <b>Windows NT V4.0</b>                                             |
|------------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| Accessing COM1 Port Settings | Start-<br>Settings-<br>ControlPanel-<br>System-<br>DeviceManager-<br>Port-<br>COM1-<br>Properties-<br>Port Settings | Start-<br>Settings-<br>ControlPanel-<br>System-<br>Hardware-<br>DeviceManager-<br>Ports-<br>COM1-<br>Properties-<br>Port Settings | Start-<br>Setting-<br>ControlPanel-<br>Ports-<br>COM1-<br>Settings |
| Baud rate                    | 57600                                                                                                               |                                                                                                                                   |                                                                    |
| Data bits                    | 8                                                                                                                   |                                                                                                                                   |                                                                    |
| Parity                       | None                                                                                                                |                                                                                                                                   |                                                                    |
| Stop Bits                    | 1                                                                                                                   |                                                                                                                                   |                                                                    |
| Flow Control                 | Xon/Xoff                                                                                                            |                                                                                                                                   |                                                                    |
| Advanced Settings            | Deselect "Use FIFO buffers"                                                                                         |                                                                                                                                   | Disable "FIFO Enable"                                              |

#### **Note**

These setups must be followed exactly, any deveations and the flash update might fail. Depending on Keaterm version the following steps may change.

### **Keaterm setup**

1. Start KEAterm.
2. At the Session Template, select Serial, and click Next>.
3. At Connection Type, select Serial, and click Next>.
4. At Connection, select the General tab and set:  
Port name: Communications Port (COM1)  
Speed: 57600
5. Click Next>.
6. At Terminal Type, select VT400-8bit, and click Next>.
7. At File Transfer Protocol, select ASCII, and click Finish.
8. From the Options menu, select Connections.
9. From Connections, select the Options tab and in the Flow control section set:  
Data to host: Xon Xoff  
Data from host: Xon Xoff
10. Next select the Rate Limiting tab and deselect:  
Limit data rate during Paste and ASCII send  
Limit data rate during keyboard input and reporting
11. From the Options menu, select History and choose personal settings.

### Powerterm 525 setup

1. Start Power Term.
2. At the Connect dialog box, set:  
Session type COM  
Terminal type VT420-8  
Baud Rate 57600  
Stop Bits 1  
Port Number 1  
Parity 8/none  
Flow Control Xon/Xoff
3. Click Connect.
4. From the Communications menu, select File Transfer Setup, and set:  
Host Data Type 8-Bit (DOS - Ascii)  
PC Data Type 8-Bit (DOS - Ascii)
5. Click OK.

### SCM Update Files

Below is a table of the files that can be flashed using the update command. When the update command is run one or all of the files can be written into the flash ROM of the appropriate module. The firmware can be found on the Wildfire website.

| System           | Target flash ROM | File name                  | Firmware contents                                     |
|------------------|------------------|----------------------------|-------------------------------------------------------|
| GS80/GS160/GS320 | Standard I/O     | SCMROM.HEX                 | SCM standard image                                    |
| GS80/GS160/GS320 | PSM module       | PSMROM.HEX<br>WF_XSROM.HEX | PSM standard image<br>CPU eXtended SROM image (XSROM) |
| GS80/GS160/GS320 | PBM module       | PBMROM.HEX                 | PBM standard image                                    |
| GS160/GS320      | HPM module       | HPMROM.HEX                 | HPM standard image                                    |

#### Note

SROM, is a plugable chip (located on the CPU) that can only be upgraded, at this time, by replacing the chip. SROM contains the only firmware that is allowed to vary in revision from CPU to CPU. All other firmwares must be the same revision!

## SCM update - Conditions of Note When Using This Update Method

### **CAUTION!**

These allowable states may be risky. Engineering prefers that all firmware upgrades be done with the operating system down and the entire system powered off.

- A master and slave SCM may be updated using this method but a master SCM cannot update a slave. To update either a master or slave the device downloading the SCMR0M.HEX file must be run connected physically to the target standard I/O local port.
- When updating the XSROM code, the entire system may be up and running operating systems but this is not recommended by Engineering at this time.
- A consequence of updates to any of the microprocessors (with the exception of the XSROM on the PSM) is that they immediately reset once the new firmware downloads. Therefore, you want to minimize the effect of the reset on the rest of the system by isolating the QBB/partition.
- When updating a PSM, the partition in which the PSM resides should be powered off.
- When updating a PBM, the PCI I/O subsystem in which the PBM resides must be removed from the resources available to an operating system.
- When updating an HPM, the system should be powered off.

### Update procedure using SCM

- Copy the appropriate hex files to your laptop.
- Set up your Keaterm or Powerterm emulators as described in the Terminal emulator setup above.
- Set up the COM1 port settings as described above in the Laptop system setup section above.
- Connect the laptop to the master console COM1 port.
- Save the contents of all console variables
  - >>> SHOW \*
- Enter the SCM console using the escape sequence. If you do not know the sequence use the SRM command
  - >>> SCM SHOW STATUS
    - SCM escape sequence : [ESC] [ESC]scm or ^^[scm
  - ^^[scm
- From the SCM prompt obtain the NVR contents. These values will need to be reset when finished
  - SHOW NVR
- Set SROM and XSROM diagnostics to "PARTIAL" bypass full diagnostics. This will shorten power up time. **Only use this step when updating the micros on the entire system.** Be sure to restore these to "FULL" when finished.
  - SET SROM\_MASK PARTIAL
  - SET XSROM\_MASK PARTIAL
- Set the variable DIMM\_READ\_DIS to a "1" to disable the PSM reading the FRU data from all the DIMMs. This will shorten power up time. **Only use this step when updating the micros on the entire system.** Be sure to restore this to "0" (zero) when finished.
  - SET DIMM\_READ\_DIS 1
- Set the variable AUTO\_QUIT\_SCM to a "0" to stop in SCM before entering SRM console. **Only use this step when updating the micros on the entire system.** Be sure to restore this to "1" (one) when finished.
  - SET AUTO\_QUIT\_SCM 0



- POWER OFF the system or specific partition in preparation for the firmware upgrade.
  - o POWER OFF
  - or
  - o POWER OFF -part #
- Execute the SHOW CSB command to obtain the necessary CSB addresses
  - o SHOW CSB
- Locate the ID of the SCM master and update it.
  - o UPDATE -CSB E0 (if ID is E0)
  - o Select the SCMROM.HEX file to load. This will load file, power on and init.
- Execute a BUILD EEPROM command. This will set the SROM\_MASK and XSROM\_MASK to full, these may be set to PARTIAL until the update is complete.
  - o BUILD EEPROM
- Power off system to continue firmware upgrade.
  - o POWER OFF
- Update the PSMS - There may be multiple PSMS in the system depending on the configuration.
  - o UPDATE -CSB 30,31,32,33,34,35,36,37
  - o Select the PSMROM.HEX file to load.
- Update the PBMS- There may be multiple PBMS in the system depending on the configuration
  - o UPDATE -CSB 10,11,12,13,14,15,16,17,18,19,1A,1B,1C,1D,1E,1F
  - o Select the PBMROM.HEX file to load.
- Update the HPM
  - o UPDATE -CSB 40
  - o Select the HPMROM.HEX file to load.
- Update the XSROMs- There may be multiple XSROMs in the system depending on the configuration
  - o UPDATE -CSB 30,31,32,33,34,35,36,37
  - o Select the WF\_XSROM.HEX file to load.
- Move laptop cable to each SCM and update them individually - There may be multiple SCMs in the system depending on the configuration
  - o UPDATE -CSB E1 thru E7
- After the updates are complete POWER ON the system
  - o POWER ON
- Now INIT the system
  - o INIT
- Reset NVR to original values
- Reset system or power OFF/ON
- Reset soft all console environmental variables original settings including LP\_COUNT and init

### SCM Update Example ( PSM only)

SCM\_E0> power off - part 0

SCM\_E0> sho csb

| CSB Type      | Firmware Revision   | FSL Revision | Power State |               |
|---------------|---------------------|--------------|-------------|---------------|
| 10 PBM        | T05.5 (05.04/02:07) | X4.3 (09.13) | ON          |               |
| 11 PBM        | T05.5 (05.04/02:07) | X4.3 (09.13) | ON          |               |
| 12 PBM        | T05.5 (05.04/02:07) | X4.3 (09.13) | ON          |               |
| 30 PSM        | T05.5 (05.04/02:04) | T4.0 (07.06) | OFF         | SrvSw: NORMAL |
| 30 XSROM      | T05.5 (05.04/03:37) |              |             |               |
| C0 CPU0/SROM  | V6.0-7              |              | OFF         |               |
| C1 CPU1/SROM  | V6.0-7              |              | OFF         |               |
| C2 CPU3/SROM  | V6.0-7              |              | OFF         |               |
| C0 IOR0       |                     |              | OFF         |               |
| C1 IOR1       |                     |              | OFF         |               |
| C2 IOR2       |                     |              | OFF         |               |
| C3 IOR3       |                     |              | OFF         |               |
| 31 PSM        | T05.5 (05.04/02:04) | T4.0 (07.06) | ON          | SrvSw: NORMAL |
| 31 XSROM      | T05.5 (05.04/03:37) |              |             |               |
| C4 CPU0/SROM  | V6.0-7              |              | ON          |               |
| C5 CPU1/SROM  | V6.0-7              |              | ON          |               |
| C6 CPU0/SROM  | V6.0-7              |              | ON          |               |
| C7 CPU1/SROM  | V6.0-7              |              | ON          |               |
| C4 IOR0       |                     |              | ON          |               |
| C5 IOR1       |                     |              | ON          |               |
| 40 HPM        | T05.5 (05.04/02:09) | X4.1 (08.18) | ON          |               |
| E0 SCM MASTER | T05.5 (05.04/02:13) | X4.3 (09.13) | ON          |               |
| E1 SCM SLAVE  | T05.5 (05.04/02:13) | X4.3 (09.13) | ON          | Ineligible    |
| E2 SCM SLAVE  | T05.5 (05.04/02:13) | X4.3 (09.13) | ON          | Ineligible    |
| E6 SCM SLAVE  | T05.5 (05.04/02:13) | X4.3 (09.13) | ON          | Ineligible    |

SCM\_E0> update -csb 30

Initiate HEX file transfer from host (press ESC-ESC to abort):

Initiate transfer of the file PSMROM.HEX to the COM1 port

For KEA term

From the Tools menu goto File Transfer and select Send to Host

Change the Files of type: to All Files (\*.\*)

Browse for and select the file PSMROM.HEX.

Click on OK.

For PowerTerm 525

From the Communication menu select Send File...

At Send File select the Ascii tab

Browse for and select the file PSMROM.HEX by clicking on the  
browse button next to the File Name input box.

Click OK.

:????address

Transferring hex file . . . . .

CSB download of .HEX file complete

Flash Update complete.

CSB Node 30 connection lost

CSB Node 30 connection added

SCM\_E0> update -csb 31

.

.

## AlphaServer DS10 and Professional WorkStation XP900

The AlphaServer DS10 and the Professional WorkStation XP900 systems contains one flash rom. It contains ARC console firmware for Windows NT and SRM console firmware for Tru64 UNIX and OpenVMS. When ever the motherboard is replaced the firmware may need to be updated. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available. The console firmware is NOT present on the V5.4 CD However it is on the V5.5 CD.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off an infoservert using the Alpha AXP System Firmware Update Utility CD
- Off floppy from AlphaBIOS Upgrade
- Using console command LFU.
- Over the network using the .SYS firmware file.
- Off of a OpenVMS disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- From the BOOTP server (UNIX).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision by the power on display, SHOW commands or from online SDA with a CLUE CONFIG command.
- Record all console environmental variables by typing SHOW \* at the >>>.
- Determine which method and firmware version will be used to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Verify the ROM Update switch is in the correct positions.
- Boot the firmware file (LFU).
- Use the verify and update commands at the UPD> prompt.
- When done exit from LFU.
- Reboot LFU using the device firmware file to update device firmware.
- Power off/on the machine to reload the new firmware.
- Reset any Environmental variables that were changed and reboot.

1. Get current firmware revision at power on or with console SHOW commands.

```
256 Meg of system memory
probing hose 0, PCI
probing PCI-to-ISA bridge, bus 1
probing PCI-to-PCI bridge, bus 2
bus 0, slot 9 -- ewa -- DE500-BA Network Controller
bus 0, slot 11 -- ewb -- DE500-BA Network Controller
bus 0, slot 13 -- dqa -- Acer Labs M1543C IDE
bus 0, slot 14 -- vga -- DEC PowerStorm
bus 2, slot 0 -- pka -- NCR 53C875
bus 2, slot 1 -- pkb -- NCR 53C875
bus 0, slot 16 -- pkc -- Qlogic ISP1020
bus 0, slot 17 -- dra -- Mylex DAC960
Testing the System
Testing the Disks (read only)
Testing the Network
Compaq AlphaServer DS10 466 MHz Console V5.4 , Apr 1 1999
>>>
```

```
P00>>> sho version
version V5.5-1 Jun 21 1999 11:49:01
P00>>> show pal
pal OpenVMS PALcode V1.59-43, Digital UNIX PALcode V1.51-50
P00>>> sho config
```



2. >>> **show** or **show \*** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.  
     **Bootdef dev**  
     **Boot\_osflags**  
     **Auto\_action**
3. Verify the motherboard switches are in the default position. The default position enables writes to the flash.
4. Boot the firmware using one of the following methods.

#### Method 1 - Load the Console Firmware Off a Local CDROM

##### **SRM Console**

- a. Insert the CD in the local CDROM.
- b. >>> **Boot -fl 0,a0 DKA400**  
     BOOTFILE: [ds10]ds10\_v6\_1.exe  
     **Note:** These filenames will change with different console versions.  
     UPD> See step 5 below for update procedure.

##### **AlphaBIOS Console**

- a. Insert the CD in the local CDROM.
- b. Enter the AlphaBIOS menu by typing **ARC** or **AlphaBIOS** or initializing the system when os\_type = nt
- c. AlphaBIOS -Select **F2** to go into Setup then select **Upgrade AlphaBIOS**

#### Method 2 - Boot the Console CD Off of an Infoserver

- a. Insert CD in the Infoserver
- b. >>> **boot ewa0 -file filename** (leave off the .sys extension)

#### Method 3 - Firmware Floppy From AlphaBIOS Upgrade

- a. Copy the files pc264nt.rom and ds10srm.rom onto a FAT formatted floppy.
- b. At the >>> type **ARC** or **AlphaBIOS**. Then select **F2** to go into SETUP.
- c. In the Setup menu, select **AlphaBIOS Upgrade**  
     It will search the CD and then the floppy for pc264nt.rom
- d. First pc264nt.rom will load and you will receive a window that lists Old and New Versions of AlphaBIOS and display the following.  
     Warning this will take several seconds .  
     Do \*NOT\* reset or power-cycle the system before  
     receiving notification that the update process  
     has completed.  
     You will be prompted to type **F10** to continue or **ESC** to abort. Pressing F10  
     will display a window with writing progress and verifying progress bars.
- e. Next ds10srm.rom will load and you will receive a window that lists Old and New Versions of SRM and display the same warning listed above.  
     You will be prompted to type **F10** to continue or **ESC** to abort. Pressing F10  
     will display a window with writing progress and verifying progress bars.
- f. An **UPGRADE COMPLETE** box will appear with the text  
     The updated version of AlphaBIOS

will now be executed.  
ENTER = Execute            ESC = Continue

- g. ESC takes you back to AlphaBIOS setup menu
- h. ENTER will reset the system and reload the new AlphaBIOS/SRM image.

#### **Method 4 - Using the Console LFU Command**

**Note:**

You may also have problems with files saved from Netscape. Either use Internet Explorer to download files or if using Netscape, get the files from the website at <ftp://ftp.digital.com/pub/Digital/Alpha/firmware/>.

#### **Floppy - CPU Firmware Only**

- a. Copy the files ds10fw.txt, pc264nt.rom and ds10srm.rom onto a 1.44 MB FAT formatted floppy disk.
- b. Execute the LFU command. LFU first checks for options firmware on the CD-ROM, then the floppy drive. The user is then prompted for input. Select the location of the firmware files (dva0 or ewa0) and then <return> to select the default filename to continue the firmware update. The Loadable Firmware Update Utility Menu will then be displayed and the installation continues as usual.

P00>>> lfu

Checking dka500.5.0.2000.1 for the option firmware files. . .  
Checking dva0 for the option firmware files. . .

Option firmware files were not found on CD or floppy.  
If you want to load the options firmware,  
please enter the device on which the files are located(ewa0),  
or just hit <return> to proceed with a standard console update: **dva0**  
Please enter the name of the options firmware files list, or  
Hit <return> to use the default filename (ds10fw.txt) : **<ds10fw.txt>**  
Copying ds10fw.txt from dva0. . .  
Copying PC264NT.ROM from dva0. . .  
Copying ds10SRM.ROM from dva0. . .  
UPD>

#### **Floppy - CPU and IO Firmware**

- a. Copy the files ds10fw.txt, pc264nt.rom and ds10srm.rom onto a 1.44 MB FAT formatted floppy disk.
- b. Copy the files ds10fw.txt, ccmab022.sys, dfxaa320.sys, kzpsaal2.sys and cipca420.sys onto a 1.44 MB FAT formatted floppy disk.
- c. Open the file ds10fw.txt. Every file you wish to load must be listed here. If the file is listed you must have it available on floppy. The standard file only has the filename for the SRM and NT console. You must add before the "!" all the file you want to load.

Example of the file

```
PC264NT.ROM
nt_fw
DS10SRM.ROM
srm_fw
CCMAB022
ccmab_fw
DFXAA320
dfxaa_fw
KZPSAA12
kzpsa_fw
CIPCA420
cipca_fw
!
```

**NOTE:**

The bolded area are filenames that were added to the standard ds10fw.txt file to allow options firmware to load.

This file is a list of all the firmware for the system.

The exclamation point above is the file terminator, so anything below it will not be seen by the update utility. Anything above the exclamation point must adhere to the existing format.

The first line will contain the directory and filename as it appears on

the update media, without the extension and in upper case.

The following line will contain the name of the file to which the image will be copied on the console's file system.

Nothing else is allowed on either line and no lines should be skipped.

For any new firmware images, there will be only two lines added to this file.

- d. At the >>> type **LFU** and select DVA0 as the device and ds10fw.txt as the filename.

P00>>> **lfu**

Checking dqa0.0.0.13.0 for the option firmware files. . .

Checking dva0 for the option firmware files. . .

Option firmware files were not found on CD or floppy.

If you want to load the options firmware,

please enter the device on which the files are located(ewa0),

or just hit <return> to proceed with a standard console update: **dva0**

Please enter the name of the options firmware files list, or

Hit <return> to use the default filename (ds10fw.txt) : **<ds10fw.txt>**

Copying ds10fw.txt from dva0. . .

Copying PC264NT.ROM from dva0. . .

Copying ds10SRM.ROM from dva0. . .

Please insert next floppy containing the options firmware,

Hit <return> when ready. Or type DONE to abort.

Copying ccmab022.sys from dva0. . .

Copying cipca420.sys from dva0. . .

Copying dfxaa320.sys from dva0. . .

Copying kzpsaal2.sys from dva0. . .

UPD>

## CD

- a. As of the V5.6 console, using the LFU console command and the CD will not work. According to engineering it is looking in the options directory for the file ds10fw.txt. It does not exist there and will fail. This will be corrected in a later version of the firmware.

## Network

- a. Copy the following files to MOM\$LOAD of you local MOP server.  
ds10fw.txt  
ds10srm.rom  
pc264nt.rom
- b. Set the attributes for the file using the following OpenVMS command on each file.  
\$ **set file/attr=rfm:fix,lrl:512,mrs:512,rat:none filename.sys**
- c. Execute LFU command and select device EWA0 for Digital PCI Ethernet or FWA0 for Digital PCI FDDI (DEFPA). Specify ds10fw.txt

P00>>> **lfu**

Checking dqa0.0.0.13.0 for the option firmware files. . .  
Checking dva0 for the option firmware files. . .

Option firmware files were not found on CD or floppy.  
If you want to load the options firmware,  
please enter the device on which the files are located(ewa0) **ewa0**  
Please enter the name of the firmware files list, or  
Hit <return> to use the default filename (ds10fw.txt) : **ds10fw.txt**

Copying ds10fw.txt from ewa0. . .  
Copying PC264NT.ROM from ewa0. . .  
Copying DS10SRM.ROM from ewa0. . .

## Method 5 - Booting Off the Network - OpenVMS

- a. Copy firmware.sys file to MOM\$LOAD of an existing node in the cluster
- b. Set VMS attributes on the file with the following command.  
\$ **Set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) ds10\_v6\_1.sys**
- c. Enable service on that node from NCP

\$ **MC NCP**

MC NCP> **Show Known Circuit Characteristic**

Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

Circuit = BNA-0 - **Circuit name will change from system to system**

|                         |                                              |
|-------------------------|----------------------------------------------|
| State                   | = on                                         |
| Service                 | = disabled (if enabled skip to boot command) |
| Counter timer           | = 65534                                      |
| Designated router       | = 28.1023 (CX028A)                           |
| Cost                    | = 4                                          |
| Maximum routers allowed | = 33                                         |
| Router priority         | = 64                                         |
| Hello timer             | = 15                                         |
| Type                    | = Ethernet                                   |
| Adjacent node           | = 28.1023 (CX028A)                           |
| Listen timer            | = 30                                         |

NCP> **Set Circ BNA-0 State OFF - This step will stop network activity**

NCP> **Set Circ BNA-0 Service Enable**

NCP> **Set Circ BNA-0 State ON**

- d. >>> **boot ewa0 -file ds10\_v6\_1**  
(Leave off .SYS or node that services request will get an error - **BAD MOP FID**)



## Method 6 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

### Non-System Disk

- Locate the firmware file ds10\_v6\_1.exe at the firmware website and copy to your system
- Set the VMS attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) ds10\_v6\_1.exe**  
\$ **copy/contiguous ds10\_v6\_1.exe "non\_system\_disk":[directory]**
- Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

### \$ MCR Writeboot

Update VAX portion of boot block (default is Y): **No**

Update Alpha portion of boot block (default is Y): **Yes**

Target system device (and boot file if not VMB.EXE): \$1\$dua5: [TEMP] ds10\_v6\_1.exe

- >>> **boot -fl 0,0 dua5**

### System Disk

- Only steps a and b above are used. Do **NOT** execute writeboot step c.
- Specify the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for the bootfile.  
>>> **b -fl 0,a dua0**  
bootfile: **dua0:[sys0.sysexec]ds10\_v6\_1.exe**

## Method 7 - BOOTP Network Upgrade - Tru64 UNIX

- Mount the Firmware Update CD using the following command:  
# **mount -rt cdf- -o noversion /dev/rz4c /mnt**
- Modify or Create the Client Database in the /etc/bootptab File  
**<host>:ht:<hw\_type>:ha=<hw\_addr>:bf=<filename>:ip=<ip\_addr>**  
  
where:  
**host** is the system name in /etc/hosts  
  
**hw\_type** is the hardware type. Proteon is ht = 4.  
Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.  
  
**hw\_addr** is the hardware address: use the console command show device.  
  
**filename** is the name of the default bootfile image:  
  
**ip\_addr** is the Internet protocol address of the system name in /etc/hosts.  
  
The following is an example of a bootptab file for the AlphaServer DS10:  
bigsox:ht=1:ha=08002b236423:bf=/mnt/DS20/ds10\_v6\_1.EXE;1:ip=16.182.0.87
- Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:  
tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt  
bootps dgram udp wait root /usr/sbin/bootpd bootpd
- Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**  
# **ps aux | grep ine**  
# **kill process# <ine process number>**
- Restart the inetd daemon:  
# **/usr/sbin/inetd**

**Note**

The bootpd and tftp daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

**Use Man bootpd and man tftpd**

f. Enter the following command to boot from the BOOTP server:

```
>>> boot -p bootp ewa0
```

Should a boot file "pathname" need to be specified in must be in quotes

```
>>> boot -p bootp ewa0 -file "/dir1/dir2/filename"
```

5. At the UPD> prompt type list to verify current and update versions. Then execute Update and Verify

**Note:**

If you are running with two CPU's, you MAY have to disable one CPU before updating.

\*\*\*\*\* Loadable Firmware Update Utility \*\*\*\*\*

| Function  | Description                                                     |
|-----------|-----------------------------------------------------------------|
| Display   | Displays the system's configuration table.                      |
| Exit      | Done exit LFU (reset).                                          |
| List      | Lists the device, revision, firmware name, and update revision. |
| Readme    | Lists important release information.                            |
| Update    | Replaces current firmware with loadable data image.             |
| Verify    | Compares loadable and hardware images.                          |
| ? or Help | Scrolls this function table.                                    |

```
UPD> list
```

| Device | Current Revision | Filename | Update Revision |
|--------|------------------|----------|-----------------|
| nt     | 5.70             | nt_fw    | 5.71            |
| srm    | 5.8-10           | srm_fw   | 6.1-2           |

```
UPD> update *
```

Confirm update on:

nt

srm

[Y/(N)]y

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

nt                    Updating to 5.71... Verifying 5.71... PASSED.

srm                   Updating to 6.1-2... Verifying 6.1-2... PASSED.

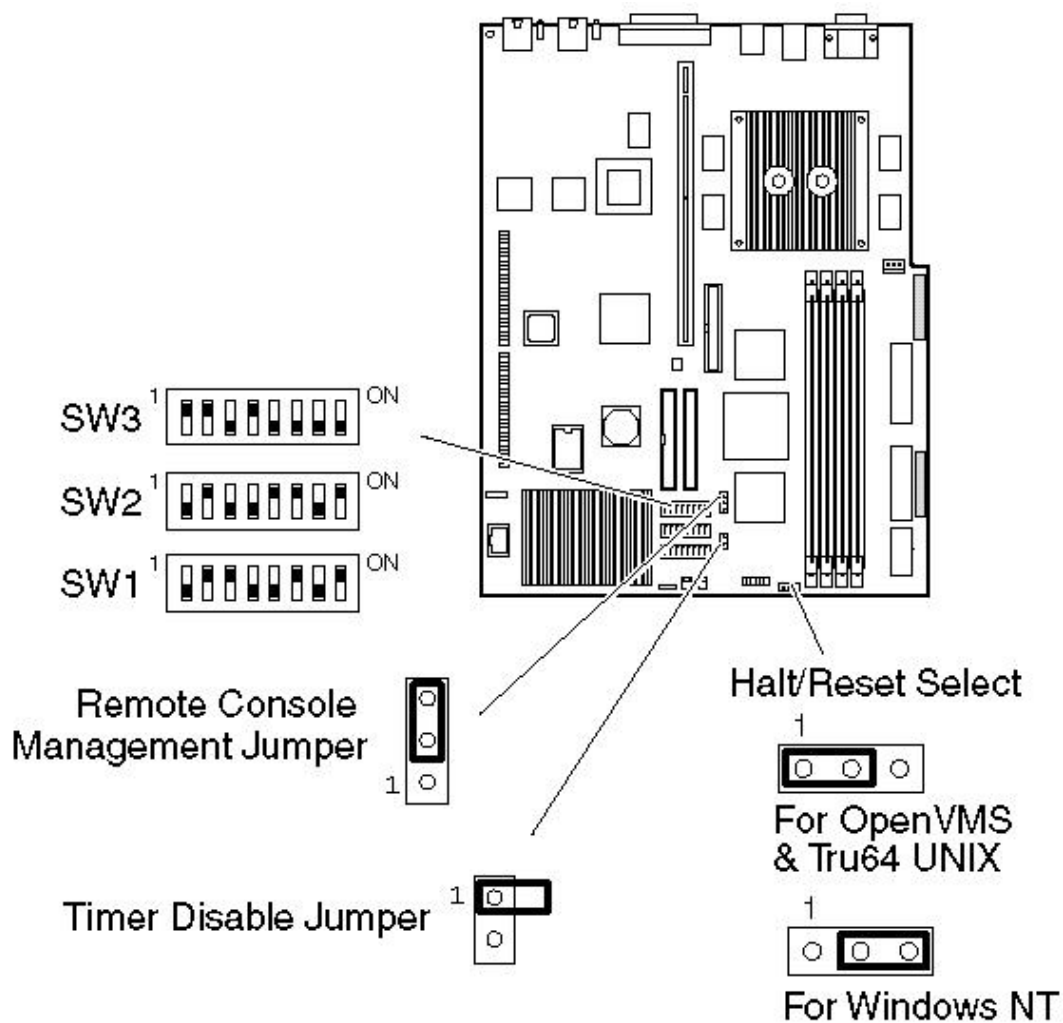
```
UPD> verify
```

nt                    Verifying 5.71... PASSED.

srm                   Verifying 6.1-2... PASSED.

## AlphaServer DS10 Jumpers

### Motherboard



Set **SW3-8 ON** to enable the FailSafe Loader



## AlphaServer DS20/DS20E

The AlphaServer DS20 system contains one flash rom. It contains ARC console firmware for Windows NT and SRM console firmware for Tru64 UNIX and OpenVMS. The ability to write to this rom is controlled by switch SW3 #8 on the motherboard. When ever the motherboard is replaced the firmware may need to be updated. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available. The console firmware is NOT present on the V5.4 CD However it is on the V5.5 CD.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off an infoservert using the Alpha AXP System Firmware Update Utility CD
- Off floppy using AlphaBIOS Upgrade
- Using console command LFU.
- Over the network using the .SYS firmware file.
- Off of a OpenVMS disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- From the BOOTP server (UNIX).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision by the power on display, SHOW commands or from online SDA with a CLUE CONFIG command.
- Record all console environmental variables by typing SHOW \* at the >>>.
- Determine which method and firmware version will be used to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Verify the ROM Update switch is in the correct positions.
- Boot the firmware file (LFU).
- Use the verify and update commands at the UPD> prompt.
- When done exit from LFU.
- Reboot LFU using the device firmware file to update device firmware.
- Power off/on the machine to reload the new firmware.
- Reset any Environmental variables that were changed and reboot.

1. Get current firmware revision at power on or with console SHOW commands.

```
Initializing...
512 Meg of system memory
probing hose 1, PCI
probing PCI-to-PCI bridge, bus 2
bus 2, slot 0 -- pka -- NCR 53C875
bus 2, slot 1 -- pkb -- NCR 53C875
bus 2, slot 2 -- ewa -- DE500-AA Network Controller
probing hose 0, PCI
probing PCI-to-ISA bridge, bus 1
bus 0, slot 5, function 1 -- dqa -- Cypress 82C693 IDE
bus 0, slot 5, function 2 -- dqb -- Cypress 82C693 IDE
bus 0, slot 5, function 3 -- usba -- Cypress 82C693 USB
bus 0, slot 6, function 0 -- pkc -- Adaptec AIC-7895
bus 0, slot 6, function 1 -- pkd -- Adaptec AIC-7895
bus 0, slot 7 -- vga -- DEC PowerStorm
Testing the System
Testing the Memory
Testing the Disks (read only)
Testing the Network
System Temperature is 24 degrees C
```

AlphaServer DS20 500 MHz Console T5.4-3, Dec 9 1998 11:49:01

```

P00>>> sho version
version T5.4-3 Dec 9 1998 11:49:01

P00>>> show pal
pal OpenVMS PALcode V1.48-37, Digital UNIX PALcode V1.44-40

P00>>> sho config
 AlphaServer DS20 500 MHz

SRM Console: T5.4-3
PALcode: OpenVMS PALcode V1.48-37, Digital UNIX PALcode V1.44-40

Processors
CPU 0 Alpha 21264-3 500 MHz SROM Revision: X1.72
 Bcache size: 0 MB

CPU 1 Alpha 21264-3 500 MHz SROM Revision: X1.72
 Bcache size: 4 MB

Core Logic
Cchip DECchip 21272-CA Rev 2
Dchip DECchip 21272-DA Rev 2
Pchip 0 DECchip 21272-EA Rev 2
Pchip 1 DECchip 21272-EA Rev 2

TIG Rev 4.11
Arbiter Rev 2.8 (0x1)

MEMORY

Array # Size Base Addr
----- -
 0 512 MB 000000000

Total Bad Pages = 0
Total Good Memory = 512 Mbytes

PCI Hose 00
 Bus 00 Slot 05/0: Cypress 82C693
 Bridge to Bus 1,
ISA
 Bus 00 Slot 05/1: Cypress 82C693 IDE
 dqa.0.0.105.0
 Bus 00 Slot 05/2: Cypress 82C693 IDE
 dqb.0.1.205.0
 Bus 00 Slot 05/3: Cypress 82C693 USB
 Bus 00 Slot 06/0: Adaptec AIC-7895
 pkc0.7.0.6.0 SCSI Bus ID 7
 Bus 00 Slot 06/1: Adaptec AIC-7895
 pkd0.7.0.106.0 SCSI Bus ID 7
 Bus 00 Slot 07: DEC PowerStorm

PCI Hose 01
 Bus 00 Slot 07: DECchip 21152-AA
 Bridge to Bus 2,
PCI
 Bus 02 Slot 00: NCR 53C875
 pka0.7.0.2000.1 SCSI Bus ID 7
 dka0.0.0.2000.1 RZ1CB-CS
 dka100.1.0.2000.1 RZ1CB-CA
 dka200.2.0.2000.1 RZ1CB-CS
 dka500.5.0.2000.1 RRD46
 Bus 02 Slot 01: NCR 53C875
 pkb0.7.0.2001.1 SCSI Bus ID 7
 Bus 02 Slot 02: DE500-AA Network Controller

```

| ISA Slot | Device | Name   | Type     | Enabled | BaseAddr | IRQ | DMA |
|----------|--------|--------|----------|---------|----------|-----|-----|
| 0        |        |        |          |         |          |     |     |
|          | 0      | MOUSE  | Embedded | Yes     | 60       | 12  |     |
|          | 1      | KBD    | Embedded | Yes     | 60       | 1   |     |
|          | 2      | COM1   | Embedded | Yes     | 3f8      | 4   |     |
|          | 3      | COM2   | Embedded | Yes     | 2f8      | 3   |     |
|          | 4      | LPT1   | Embedded | Yes     | 3bc      | 7   |     |
|          | 5      | FLOPPY | Embedded | Yes     | 3f0      | 6   | 2   |

2. >>> **show** or **show \*** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.

**Bootdef dev**  
**Boot\_osflags**  
**Auto\_action**

3. Verify the motherboard switches are in the default position. The default position enables writes to the flash.
4. Boot the firmware using one of the following methods.

#### Method 1 - Load the Console Firmware Off a Local CDROM

##### **SRM Console**

- a. Insert the CD in the local CDROM.
- b. >>> **Boot -fl 0,a0 DKA400**  
 BOOTFILE: [ds20]ds20\_v6\_1.exe  
**Note:** These filenames will change with different console versions.
- Apu-> See step 5 below for update procedure.

##### **AlphaBIOS Console**

- a. Insert the CD in the local CDROM.
- b. Enter the AlphaBIOS menu by typing **ARC** or **AlphaBIOS** or initializing the system when os\_type = nt
- c. AlphaBIOS -Select **F2** to go into Setup then select **Upgrade AlphaBIOS**

#### Method 2 - Boot the Console CD Off of an Infoserwer

- a. Insert CD in the Infoserwer
- b. >>> **boot ewa0 -file filename** (leave off the .sys extension)

#### Method 3 - Firmware Floppy From AlphaBIOS Upgrade

- a. Copy the files pc264nt.rom and pc264srm.rom onto a 1.44 MB FAT formatted floppy disk.
- b. At the >>> type **ARC** or **AlphaBIOS**. Then select **F2** to go into SETUP.
- c. In the Setup menu, select **AlphaBIOS Upgrade**  
 It will search the CD and then the floppy for pc264nt.rom
- d. First pc264nt.rom will load and you will receive a window that lists Old and New Versions of AlphaBIOS and display the following.

Warning this will take several seconds .  
 Do \*NOT\* reset or power-cycle the system before  
 receiving notification that the update process

has completed.

You will be prompted to type **F10** to continue or **ESC** to abort. Pressing F10 will display a window with writing progress and verifying progress bars.

- e. Next pc264srm.rom will load and you will receive a window that lists Old and New Versions of SRM and display the same warning listed above.  
You will be prompted to type **F10** to continue or **ESC** to abort. Pressing F10 will display a window with writing progress and verifying progress bars.

- f. An **UPGRADE COMPLETE** box will appear with the text

The updated version of AlphaBIOS  
will now be executed.  
ENTER = Execute            ESC = Continue

- g. ESC takes you back to AlphaBIOS setup menu

- h. ENTER will reset the system and reload the new AlphaBIOS/SRM image.

#### **Method 4 - Using the Console LFU Command**

**Note:**

You may also have problems with files saved from Netscape. Either use Internet Explorer to download files or if using Netscape, get the files from the website at <ftp://ftp.digital.com/pub/Digital/Alpha/firmware/>.

#### **Floppy**

- a. You will need two FAT formatted floppies. Copy the following files onto the first floppy.

pc264fw.txt  
pc264nt.sys  
pc264srm.sys

- b. Copy the following files to a second fat formatted floppy.

pc264fsb.sys  
ccmab022.sys  
cipca420.sys  
dfxaa320.sys  
kzpsaal2.sys

You will need to edit pc264fw.txt to reflect all the files you have loaded onto floppy.

- c. Execute the LFU command. LFU first checks for options firmware on the CD-ROM, then the floppy drive. The user is then prompted for input. Select the location of the firmware files (dva0 or ewa0) and then <return> to select the default filename to continue the firmware update. The Loadable Firmware Update Utility Menu will then be displayed and the installation continues as usual.

P00>>> **lfu**

Checking dka500.5.0.2000.1 for the option firmware files. . .  
Checking dva0 for the option firmware files. . .

Option firmware files were not found on CD or floppy.  
If you want to load the options firmware,  
please enter the device on which the files are located(ewa0),  
or just hit <return> to proceed with a standard console update: **dva0**  
Please enter the name of the options firmware files list, or  
Hit <return> to use the default filename (pc264fw.txt) : **<return>**



```

Copying pc264fw.txt from dva0. . .
Copying PC264NT.SYS from dva0. . .
Copying PC264SRM.SYS from dva0. . .
Copying PC264FSB.SYS from dva0. . .
Copying ccmab022.sys from dva0. . .
Copying cipca420.sys from dva0. . .
Copying dfxaa320.sys from dva0. . .
Copying kzpsaal2.sys from dva0. . .

```

UPD>

## CD

- a. Insert the CD in the local CDROM.
- b. Execute LFU command and if the firmware CD is loaded it will not ask any questions and will load the files.

If you type LFU before you insert the CD, it will look for the files on CD and floppy. When it can't find then it will prompt you for the location of the files. On one DS20 I had to enter DKA500 and not CDA0. On the DS20E I had to enter DQA0.

- c. It will now ask for the default filename. Press <return> to use the default.

## Network

- a. Copy the following files to the local mop server's MOP load area.

```

pc264fw.txt
pc264nt.sys
pc264srm.sys
pc264fsb.sys
ccmab022.sys
cipca420.sys
dfxaa320.sys
kzpsaal2.sys

```

- b. Execute the LFU command. LFU first checks for options firmware on the CD-ROM, then the floppy drive. The user is then prompted for input. Select the location of the firmware files (dva0 or ewa0) and then <return> to select the default filename to continue the firmware update. The Loadable Firmware Update Utility Menu will then be displayed and the installation continues as usual.

P00>>> **lfu**

```

Checking dka500.5.0.2000.1 for the option firmware files. . .
Checking dva0 for the option firmware files. . .

```

```

Option firmware files were not found on CD or floppy.
If you want to load the options firmware,
please enter the device on which the files are located(ewa0),
or just hit <return> to proceed with a standard console update: ewa0
Please enter the name of the options firmware files list, or
Hit <return> to use the default filename (pc264fw.txt) : <return>

```

```

Copying pc264fw.txt from dva0. . .
Copying PC264NT.SYS from dva0. . .
Copying PC264SRM.SYS from dva0. . .
Copying PC264FSB.SYS from dva0. . .
Copying ccmab022.sys from dva0. . .
Copying cipca420.sys from dva0. . .
Copying dfxaa320.sys from dva0. . .
Copying kzpsaal2.sys from dva0. . .

```

UPD>



## Method 5 - Booting Off the Network - OpenVMS

- a. Copy firmware.sys file to MOM\$LOAD of an existing node in the cluster
- b. Set VMS attributes on the file with the following command.  
\$ Set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) ds20\_v6\_1.sys

- c. Enable service on that node from NCP

```
$ MC NCP
MC NCP> Show Known Circuit Characteristic
Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

Circuit = BNA-0 - Circuit name will change from system to system
State = on
Service = disabled (if enabled skip to boot command)
Counter timer = 65534
Designated router = 28.1023 (CXO28A)
Cost = 4
Maximum routers allowed = 33
Router priority = 64
Hello timer = 15
Type = Ethernet
Adjacent node = 28.1023 (CXO28A)
Listen timer = 30

NCP> Set Circ BNA-0 State OFF - This step will stop network activity
NCP> Set Circ BNA-0 Service Enable
NCP> Set Circ BNA-0 State ON
```

- d. >>> boot ewa0 -file ds20\_v6\_1  
(Leave off .SYS or node that services request will get an error - BAD MOP FID)

## Method 6 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

### **Non-System Disk**

- a. Locate the firmware file ds20\_v6\_1.exe at the firmware website and copy it to your system
- b. Set the VMS attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:  
\$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) ds20\_v6\_1.exe  
\$ copy/contiguous ds20\_v6\_1.exe "non\_system\_disk":[directory]
- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

### **\$ MCR Writeboot**

```
Update VAX portion of boot block (default is Y): No
Update Alpha portion of boot block (default is Y): Yes
Target system device (and boot file if not VMB.EXE): 1dua5: [TEMP] ds20_v6_1.exe
```

- d. >>> boot -fl 0,0 dua5

### **System Disk**

- a. Only steps a and b above are used. Do **NOT** execute writeboot step c.
- b. Specify the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for the bootfile.  
>>> b -fl 0,a dua0  
bootfile: dua0:[sys0.sysexec]ds20\_v6\_1.exe

## Method 7 - BOOTP Network Upgrade - Tru64 UNIX

- a. Mount the Firmware Update CD using the following command:  
`# mount -rt cdf- -o noversion /dev/rz4c /mnt`
- b. Modify or Create the Client Database in the /etc/bootptab File  
`<host>:ht:<hw_type>:ha=<hw_addr>:bf=<filename>:ip=<ip_addr>`

where:

**host** is the system name in /etc/hosts

**hw\_type** is the hardware type. Proteon is ht = 4.

Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.

**hw\_addr** is the hardware address: use the console command show device.

**filename** is the name of the default bootfile image:

**ip\_addr** is the Internet protocol address of the system name in /etc/hosts.

The following is an example of a bootptab file for the AlphaServer DS20:  
bigsox:ht=1:ha=08002b236423:bf=/mnt/DS20/ds20\_v6\_1.EXE;1:ip=16.182.0.87

- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:  
`tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt`  
`bootps dgram udp wait root /usr/sbin/bootpd bootpd`
- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**  
`# ps aux | grep ine`  
`# kill process# <ine process number>`
- e. Restart the inetd daemon:  
`# /usr/sbin/inetd`

### Note

The bootpd and tftp daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

**Use Man bootpd and man tftpd**

- f. Enter the following command to boot from the BOOTP server:  
`>>> boot -p bootp ewa0`

Should a boot file "pathname" need to be specified in must be in quotes

`>>> boot -p bootp ewa0 -file "/dir1/dir2/filename"`

5. At the UPD> prompt type list to verify current and update versions. Then execute Update and Verify

### Note:

If you are running with two CPU's, you MAY have to disable one CPU before updating.

\*\*\*\*\* Loadable Firmware Update Utility \*\*\*\*\*

| Function  | Description                                                     |
|-----------|-----------------------------------------------------------------|
| Display   | Displays the system's configuration table.                      |
| Exit      | Done exit LFU (reset).                                          |
| List      | Lists the device, revision, firmware name, and update revision. |
| Readme    | Lists important release information.                            |
| Update    | Replaces current firmware with loadable data image.             |
| Verify    | Compares loadable and hardware images.                          |
| ? or Help | Scrolls this function table.                                    |

UPD> **list**

| Device | Current Revision | Filename | Update Revision |
|--------|------------------|----------|-----------------|
| nt     | 5.70             | nt_fw    | 5.71            |
| srm    | 5.8-10           | srm_fw   | 6.1-2           |

UPD> **update \***

Confirm update on:

nt

srm

[Y/(N)]y

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

nt                    Updating to 5.71... Verifying 5.71... PASSED.

srm                   Updating to 6.1-2... Verifying 6.1-2... PASSED.

UPD> **verify**

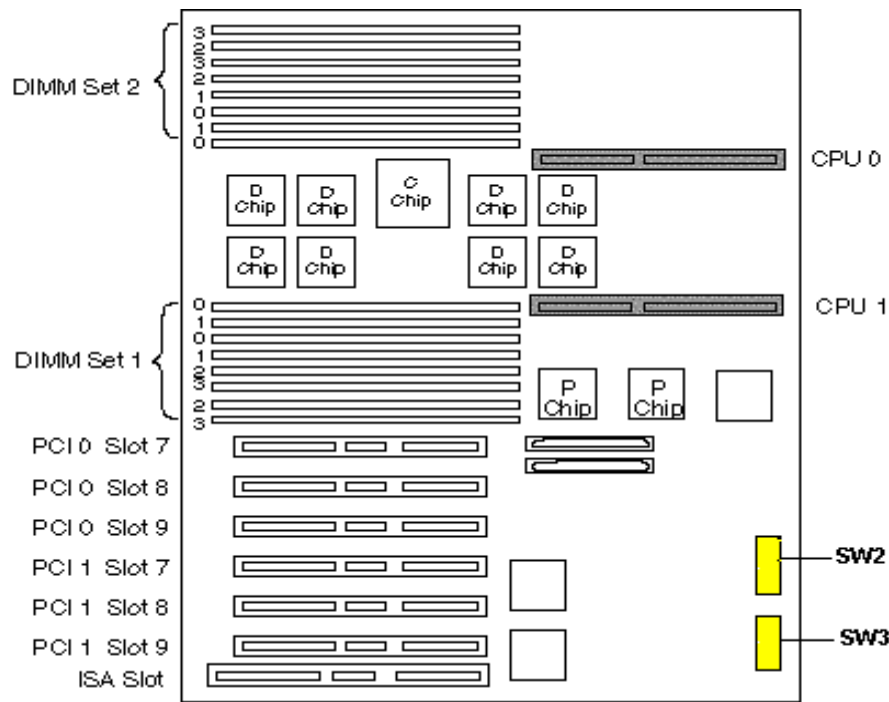
nt                    Verifying 5.71... PASSED.

srm                   Verifying 6.1-2... PASSED.



AlphaServer DS20 Jumpers

Motherboard



| SW2 | Label                 | Function                                                                          | Default |
|-----|-----------------------|-----------------------------------------------------------------------------------|---------|
| 1   | FSB - FailSafe Booter | Tells the SROM to jump either to SRM or the FSB (currently the debug monitor)     | off *   |
| 2   | CACHE_OFF_A           | These two bits are currently assigned to different (faster/slower) memory timings | off     |
| 3   | CACHE_OFF_B           |                                                                                   | off     |
| 4   | MINI_DEB              | The SROM jumps to the SROM Mini debugger                                          | off     |
| 5   | TS_SPD0               | Tsunami speed[0]                                                                  | on      |
| 6   | TS_SPD1               | Tsunami speed[1]                                                                  | on      |
| 7   | TS_SPD2               | Tsunami speed[2]                                                                  | off     |
| 8   | PASS_BY               | Selects the debug monitor to output thru the debug port on the daughter card      | off     |

|     | Label    | Function                               | Default     |
|-----|----------|----------------------------------------|-------------|
| SW3 |          |                                        |             |
| 1   | CON7     | Not assigned                           | off         |
| 2   | CON6     | SFD 0 (on) = 2 cycles (off) = 3 cycles | off         |
| 3   | CON5     | SED[1] 00 = 2 cycles 01 = 3 cycles     | off         |
| 4   | CON4     | SED[0] 10 = 4 cycles 11 = 5 cycles     | off / on ** |
| 5   | CON3     | Cpu 1 Clock forward preset             | off         |
| 6   | CON2     | Cpu 0 Clock forward preset             | off         |
| 7   | Spare    | not used                               | off         |
| 8   | FLASH_WR | Enables write to the Flash ROM         | off         |

\* Off is towards the PCI slots

**\*\* SW3-4 default is listed as OFF but it needs to be ON in our lab**





## **Compaq AlphaServer ES40/TS40**

The Compaq AlphaServer ES40 clipper system backplane module (CSB) has 2 1MB flash roms that contain an Abios console firmware for AlphaBIOS and a SRM console firmware for Tru64 UNIX and OpenVMS. The system also has TIG, RMC and SRM code that gets loaded. The ability to write to these roms is controlled by setting jumpers J12 and J13 on the CSB to pins 1-2. When ever the system board is replaced the firmware will need to be updated. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available. RMC firmware may need to be loaded separately by specifying the proper RMC file at the bootfile prompt.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off an infoservert using the Alpha AXP System Firmware Update Utility CD
- Over the network using the .SYS firmware file.
- Off of a firmware floppy - Requires two floppies.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- From the BOOTP server (UNIX).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision by the power on display, SHOW commands or from online SDA with a CLUE CONFIG command.
- Record all console environmental variables by typing SHOW \* at the >>>.
- Determine which method and firmware version will be used to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Verify the ROM Update Jumpers are in the correct positions.
- Boot the firmware file (LFU).
- Type exit and answer Y to enter manual update mode.
- Use the list, update and verify commands at the UPD> prompt.
- When done exit from LFU.
- Reboot LFU using the device firmware file to update device firmware.
- Power off/on the machine to reload the new firmware.
- Reset any Environmental variables that were changed and reboot.

1. Get current firmware revision at power on or with console SHOW commands.

Power on display

OpenVMS PALcode V1.52-2, Tru64 UNIX PALcode V1.47-9

```
starting console on CPU 0
initialized idle PCB
initializing semaphores
initializing heap
initial heap 200c0
memory low limit = 146000
heap = 200c0, 17fc0
initializing driver structures
initializing idle process PID
initializing file system
initializing hardware
initializing timer data structures
lowering IPL
CPU 0 speed is 2.00 ns (500MHz)
create dead_eater
create poll
create timer
create powerup
access NVRAM
```

```

Memory size 512 MB
testing memory
...
probe I/O subsystem
probing hose 1, PCI
bus 0, slot 6 -- ewa -- DE500-BA Network Controller
probing hose 0, PCI
probing PCI-to-ISA bridge, bus 1
bus 0, slot 2 -- vga -- DEC PowerStorm
bus 0, slot 4 -- pka -- NCR 53C895
bus 0, slot 15 -- dqa -- Acer Labs M1543C IDE
bus 0, slot 15 -- dqb -- Acer Labs M1543C IDE
starting drivers
entering idle loop
initializing keyboard
starting console on CPU 1
initialized idle PCB
initializing idle process PID
lowering IPL
CPU 1 speed is 2.00 ns (500MHz)
create powerup
os_type: UNIX - console CIPCA driver not started
Memory Testing and Configuration Status
 Array Size Base Address

 0 256Mb 0000000000000000
 1 256Mb 0000000010000000

 512 MB of System Memory
Testing the System
Testing the Disks (read only)
Testing the Network
initializing GCT/FRU at offset 176000
AlphaServer ES40 Console T5.4-4, built on Mar 8 1999 at 18:21:15

P00>>> show version
version T5.4-4 Mar 8 1999 18:21:15

P00>>> show pal
pal OpenVMS PALcode V1.52-2, Tru64 UNIX PALcode V1.47-9

P00>>> show config
 Compaq Computer Corporation
 Compaq AlphaServer ES40

Firmware
SRM Console: T5.4-4
ARC Console: 5.68
PALcode: OpenVMS PALcode V1.52-2, Tru64 UNIX PALcode V1.47-9
Serial Rom: t1.9-F
RMC Rom: V1.0
RMC Flash Rom: X1.D

Processors
CPU 0 Alpha 21264-4 500 MHz 4MB Bcache
CPU 1 Alpha 21264-4 500 MHz 4MB Bcache

Core Logic
Cchip DECchip 21272-CA Rev 9 (C4)
Dchip DECchip 21272-DA Rev 2
Pchip 0 DECchip 21272-EA Rev 2
Pchip 1 DECchip 21272-EA Rev 2
TIG Rev 10

Memory
 Array Size Base Address

 0 256Mb 0000000000000000
 1 256Mb 0000000010000000

```

|      |                         |                    |                      |
|------|-------------------------|--------------------|----------------------|
|      | 512 MB of System Memory |                    |                      |
| Slot | Option                  | Hose 0, Bus 0, PCI |                      |
| 2    | DEC PowerStorm          |                    |                      |
| 4    | NCR 53C895              | pka0.7.0.4.0       | SCSI Bus ID 7        |
|      |                         | dka0.0.0.4.0       | RZ2CA-LA             |
| 7    | Acer Labs M1543C        |                    | Bridge to Bus 1, ISA |
| 15   | Acer Labs M1543C IDE    | dqa.0.0.15.0       |                      |
|      |                         | dqb.0.1.15.0       |                      |
|      |                         | dqa0.0.0.15.0      | TOSHIBA CD-ROM XM-*  |
| 19   | Acer Labs M1543C USB    |                    |                      |
|      | Option                  | Hose 0, Bus 1, ISA |                      |
|      | Floppy                  | dva0.0.0.1000.0    |                      |
| Slot | Option                  | Hose 1, Bus 0, PCI |                      |
| 6    | DE500-BA Network Con    | ewa0.0.0.6.1       | 00-00-F8-1B-2B-EE    |

P00>>>

2. >>> show or show\* to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.

```

Bootdef_dev
Boot_osflags
Auto_action

```

3. Check that the ROM update jumpers are enabled. Consult the service manual for their location and setting. It should be enabled by default.
4. Boot the firmware using one of the following methods.

#### **Method 1 - Load the Console Firmware Off a Local CDROM**

##### **SRM Console**

- a. Insert the CD in the local CDROM.
- b. >>> **Boot -fl 0,a0 DQA0**  
 BOOTFILE: [es40]es40\_v6\_1.exe  
**Note:** These filenames will change with different console versions.  
 UPD> See step 5 below for update procedure.

##### **AlphaBIOS Console**

- a. Insert the CD in the local CDROM.
- b. Enter the AlphaBIOS menu by typing **ARC** or **AlphaBIOS** or initializing the system when os\_type = nt
- c. AlphaBIOS -Select **F2** to go into Setup then select **Upgrade AlphaBIOS**

#### **Method 2 - Boot the Console CD Off of an Infoserver**

- a. Insert CD in the Infoserver
- b. >>> **boot ewa0 -file filename** (leave off the .sys extension)

#### **Method 3 - Booting Off the Network - OpenVMS**

- a. Copy the firmware to your system from the firmware website at <http://ftp.digital.com/pub/Digital/Alpha/firmware/readmes/es40.html>
- b. Copy es40\_v6\_1.sys file to MOM\$LOAD of an existing node in the cluster
- c. Set VMS attributes on the file with the following command.

```
$ Set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) es40_v6_1.sys
```

- d. Enable service on that node from NCP

```
$ MC NCP
MC NCP> Show Known Circuit Characteristic
Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

Circuit = BNA-0 - Circuit name will change from system to system
State = on
Service = disabled (if enabled skip to boot command)
Counter timer = 65534
Designated router = 28.1023 (CX028A)
Cost = 4
Maximum routers allowed = 33
Router priority = 64
Hello timer = 15
Type = Ethernet
Adjacent node = 28.1023 (CX028A)
Listen timer = 30

NCP> Set Circ BNA-0 State OFF - This step will stop network activity
NCP> Set Circ BNA-0 Service Enable
NCP> Set Circ BNA-0 State ON
```

- e. >>> boot ewa0 -file es40\_v6\_1

(Leave off .SYS or node that services request will get an error - BAD MOP FID)

#### **Method 4 - Boot Off of a Floppy**

##### **NT**

This method requires two floppies. One with the LFU utility and the other with the system firmware. There are four different LFU files depending on the platform. They are:

- clu.exe ES40.zip
- ilu.exe ES40lp.zip
- flu.exe ES40cv.zip
- glu.exe TS20-TS40.zip

- a. Download appropriate zip file from the firmware websites directory at <http://ftp.digital.com/pub/Digital/Alpha/firmware/>. Extract the files to the same directory on your PC or Alpha. If MKBOOT.EXE does not work on the Alpha locate MAKEBOOT.EXE on Cybrary at <http://Cybrary.inet.cpqcorp.net/DOWNLOAD/UTILITIES/SYSTEM/makeboot.zip>
- b. Insert a FAT formatted floppy in the drive
- c. Bring up a DOS window and execute the MKBOOT command

```
C:\mkboot clu.exe
Bad command or file name
mkboot V1.1: create a bootable floppy
Please insert a formatted diskette into drive A: and press and key: <CR>
Number of sectors per track for this disk is 18
Writing image to drive A:.. Press ^C to abort.
Track: 37 Head: 0 Sector: 10
Done.
```

- d. Copy the files clarcrom.exe, clsrmmrom.exe for EV6 CPUs or cl67srmrom.exe for EV67 and EV68 CPUs to a second fat formatted floppy. Rename the cl67srmrom.exe file to cl67srm.exe.

- e. Insert the first floppy in the ES40 DVA0 and boot it. At the UPD prompt type exit and answer Y for manual update

>>> **Boot DVA0**

Checking dqa0.0.0.15.0 for the option firmware files. . .  
dqa0.0.0.15.0 has no media present or is disabled via the RUN/STOP switch  
dqa0.0.0.15.0 has no media present or is disabled via the RUN/STOP switch  
Checking dva0 for the option firmware files. . .  
If you have a floppy containing option firmware,  
Please insert it now and hit <return> when ready. <return>  
Option firmware not copied.

.  
. .

UPD> **exit**

Do you want to do a manual update? [y/(n)] **y**

\*\*\*\*\* Loadable Firmware Update Utility \*\*\*\*\*

| Function  | Description                                                     |
|-----------|-----------------------------------------------------------------|
| Display   | Displays the system's configuration table.                      |
| Exit      | Done exit LFU (reset).                                          |
| List      | Lists the device, revision, firmware name, and update revision. |
| Readme    | Lists important release information.                            |
| Update    | Replaces current firmware with loadable data image.             |
| Verify    | Compares loadable and hardware images.                          |
| ? or Help | Scrolls this function table.                                    |

- f. Insert floppy diskette 2. This has clsrmmrom.exe and csarcrom.exe on it.

UPD> **update srm -path fat:clsrmmrom.exe/dva0** for EV6 CPUs

UPD> **update srm -path fat:cl67srm.exe/dva0** for EV67 CPUs

Confirm update on:

SRM

[Y/(N)]**y**

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

SRM                    Updating to v5.7-84...    Verifying v5.7-84...    PASSED.

UPD> **update abios -path fat:clarcrom.exe/dva0**

Confirm update on:

Abios

[Y/(N)]**y**

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

Abios                    Updating to v5.70...    Verifying v5.70...    PASSED.

UPD> **exit**

## Tru64 UNIX

This method requires two floppies. One with the LFU utility and the other with the system firmware. There are 4 different LFU utilities depending on the system type.

- a. Locate the following files and unzip them on a PC. They can be found on the firmware website at <http://ftp.digital.com/pub/Digital/Alpha/firmware/>

- clu.exe        ES40.zip
- ilu.exe        ES40lp.zip
- flu.exe        ES40cv.zip
- glu.exe        TS20-TS40.zip

These file contain the SRM, AlphaBIOS, LFU image and mkbootfirm.exe files.

- b. Ftp the files to your UNIX server. Rename cl67srmrom.exe to cl67srm.exe.

- c. Insert floppy diskette 1.

- d. Change directory to where files were downloaded.  
# **cd [to directory with files]**

- e. You must set mkbootfirm file permissions to have execute permissions.  
# **chmod 755 mkbootfirm**

- f. Format the floppy.  
# **fddisk -fmt /dev/rfd0a**        or

With Tru64 UNIX V5.0 you can do one of the following

# **fddisk -fmt /dev/rdisk/floppy0a**        or

# **cd /dev**  
# **./MAKEDEV fd0**  
# **fddisk -fmt /dev/rfd0a**

- g. From directory where files are located execute the following  
# **./mkbootfirm clu.exe |dd of=/dev/rfd0c bs=64k**

- h. Insert floppy diskette 2.

- i. You need to create special device files for device fd0 if you have not already done this.

# **cd /dev**  
# **./MAKEDEV fd0**

- j. Change directory to where files were downloaded.  
# **cd [to directory with files]**

- k. Create a soft link to /dev/fddrive with the following command  
# **ln -s /dev/rfd0c /dev/fddrive**

- l. Format the floppy.  
# **fddisk -fmt /dev/rfd0a**        or

With Tru64 UNIX V5.0 you can do one of the following

# **fddisk -fmt /dev/rdisk/floppy0a**        or  
# **fddisk -fmt /dev/rfd0a**

- m. Add a DOS format onto the floppy disk  
# **/usr/bin/mtools/mformat -s 18 a:**

- n. Use mwrite to low level copy UNIX to DOS the SRM and ARC firmware.  
# **/usr/bin/mtools/mwrite clsrmmrom.exe a:\clsrmmrom.exe**        for EV6 CPUs  
# **/usr/bin/mtools/mwrite cl67srmrom.exe a:\cl67srm.exe**        for EV67/EV68 CPUs  
# **/usr/bin/mtools/mwrite clarcrom.exe a:\clarcrom.exe**

- o. Insert the first floppy in the ES40 DVA0 and boot it. At the UPD prompt type exit and answer Y for manual update

>>> **Boot DVA0**

Checking dqa0.0.0.15.0 for the option firmware files. . .  
dqa0.0.0.15.0 has no media present or is disabled via the RUN/STOP switch  
dqa0.0.0.15.0 has no media present or is disabled via the RUN/STOP switch  
Checking dva0 for the option firmware files. . .  
If you have a floppy containing option firmware,  
Please insert it now and hit <return> when ready. <return>  
Option firmware not copied.

.  
. .  
.

UPD> **exit**

Do you want to do a manual update? [y/(n)] **y**

\*\*\*\*\* Loadable Firmware Update Utility \*\*\*\*\*

| Function  | Description                                                     |
|-----------|-----------------------------------------------------------------|
| Display   | Displays the system's configuration table.                      |
| Exit      | Done exit LFU (reset).                                          |
| List      | Lists the device, revision, firmware name, and update revision. |
| Readme    | Lists important release information.                            |
| Update    | Replaces current firmware with loadable data image.             |
| Verify    | Compares loadable and hardware images.                          |
| ? or Help | Scrolls this function table.                                    |

- p. Insert floppy diskette 2. This has clsrmmrom.exe and csarcrom.exe on it.

UPD> **update srm -path fat:clsrmmrom.exe/dva0** for EV6 CPUs

UPD> **update srm -path fat:cl67srm.exe/dva0** for EV67 CPUs

Confirm update on:

SRM

[Y/(N)]**y**

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

SRM Updating to v5.7-84... Verifying v5.7-84... PASSED.

UPD> **update abios -path fat:clarccrom.exe/dva0**

Confirm update on:

Abios

[Y/(N)]**y**

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

Abios Updating to v5.70... Verifying v5.70... PASSED.

UPD> **exit**



## Method 5 - OpenVMS - Boot Off of a Disk - Non-System Disk and System Disk

### Non-System Disk

- a. Locate the firmware file es40\_v6\_1.exe at the firmware website and copy it to your system
- b. Set the VMS attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:  
\$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) es40\_v6\_1.exe  
\$ copy/contiguous es40\_v6\_1.exe "non\_system\_disk":[directory]
- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

### \$ MCR Writeboot

Update VAX portion of boot block (default is Y): **No**

Update Alpha portion of boot block (default is Y): **Yes**

Target system device (and boot file if not VMB.EXE): \$1\$dua5: [TEMP] es40\_v6\_1.exe

- d. >>> boot -fl 0,0 dua5

### System Disk

- a. Only steps a and b above are used. Do **NOT** execute writeboot step c.
- b. Specify the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for the bootfile.  
>>> b -fl 0,a dua0  
bootfile: dua0:[sys0.sysexec] es40\_v6\_1.exe

## Method 6 - BOOTP Network Upgrade - Tru64 UNIX

- a. Mount the Firmware Update CD using the following command:  
# mount -rt cdf- -o noversion /dev/rz4c /mnt
- b. Modify or Create the Client Database in the /etc/bootptab File  
<host>:ht:<hw\_type>:ha=<hw\_addr>:bf=<filename>:ip=<ip\_addr>

where:

**host** is the system name in /etc/hosts

**hw\_type** is the hardware type. Proteon is ht = 4.

Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.

**hw\_addr** is the hardware address: use the console command show device.

**filename** is the name of the default bootfile image:

**ip\_addr** is the Internet protocol address of the system name in /etc/hosts.

The following is an example of a bootptab file for the AlphaServer ES40:  
bigsox:ht=1:ha=08002b236423:bf=/mnt/ES40/es40\_v6\_1.exe;1:ip=16.182.0.87

- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:  
tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt  
bootps dgram upd wait root /usr/sbin/bootpd bootpd
- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**  
# ps aux | grep ine  
# kill process# <ine process number>
- e. Restart the inetd daemon:  
# /usr/sbin/inetd

#### Note

The bootpd and tftpd daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

**Use Man bootpd and man tftpd**

f. Enter the following command to boot from the BOOTP server:

```
>>> boot -p bootp ewa0
```

Should a boot file "pathname" need to be specified in must be in quotes

```
>>> boot -p bootp ewa0 -file "/dir1/dir2/filename"
```

5. At the UPD> prompt type exit then answer Y to the question Do you want to do a manual update? This is required to update TIG and RMC firmware.

```
UPD> exit
```

```
Do you want to do a manual update [y/(n)]? Y
```

6. At the UPD> prompt type list to verify current and update versions. Then execute Update and Verify

#### \*\*\*\*\* Loadable Firmware Update Utility \*\*\*\*\*

| Function  | Description                                                     |
|-----------|-----------------------------------------------------------------|
| Display   | Displays the system's configuration table.                      |
| Exit      | Done exit LFU (reset).                                          |
| List      | Lists the device, revision, firmware name, and update revision. |
| Readme    | Lists important release information.                            |
| Update    | Replaces current firmware with loadable data image.             |
| Verify    | Compares loadable and hardware images.                          |
| ? or Help | Scrolls this function table.                                    |

```
UPD> list
```

| Device | Current Revision | Filename | Update Revision |
|--------|------------------|----------|-----------------|
| Abios  | 5.70             | abios_fw | 5.70            |
| SRM    | v5.8-43          | srm_fw   | v5.9-24         |
| rmc    | v2.5             | rmc_fw   | v2.6            |
| srom   | v2.11-F          | srom_fw  | v2.12-F         |
| tig    | 10               | tig_fw   | 10              |

```
UPD> update *
```

Confirm update on:

Abios

SRM

rmc

srom

tig

[Y/(N)]y

WARNING: updates may take several minutes to complete for each device.

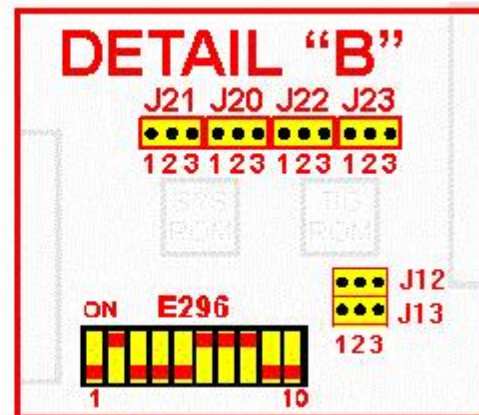
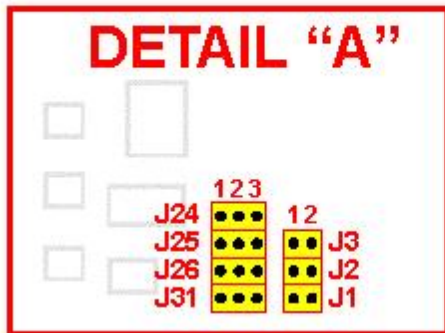
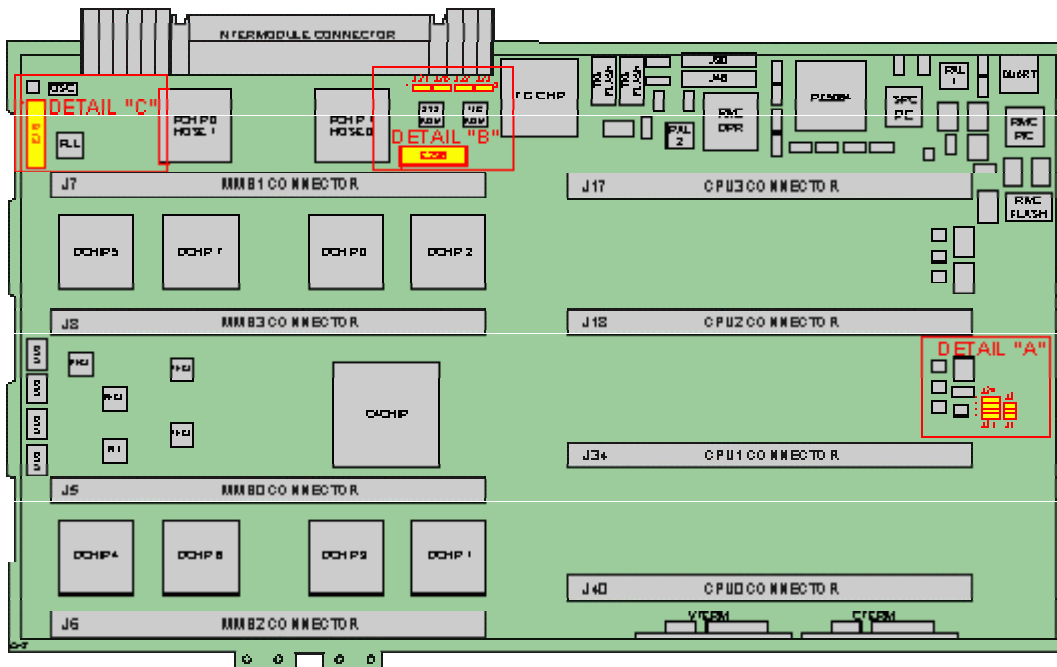
DO NOT ABORT!

```
Abios Updating to 5.70... Verifying 5.70... PASSED.
SRM Updating to v5.9-24... Verifying v5.9-24... PASSED.
rmc Updating to V2.6... Verifying V2.6... PASSED.
srom Updating to V2.12-F... Verifying V2.12-F... PASSED.
tig update rev 10 is less than current rev f.
Continue [Y/N] y
tig Updating to 10... Verifying 10... PASSED.
```



# Compaq AlphaServer ES40 Jumpers

## CSB - System Backplane



| CSB Jumper | Position               | Function                                            |                                                                                                                                       |
|------------|------------------------|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| J24        | 1-2                    | Disable RMC Flash Update                            |                                                                                                                                       |
|            | 2-3                    | Enable RMC Flash Update                             |                                                                                                                                       |
| J21        | 1-2                    | Load TIG from Flash RAM                             |                                                                                                                                       |
|            | 2-3                    | Load TIG from Serial ROM                            |                                                                                                                                       |
| J20        | 1-2 = “0”<br>2-3 = “1” | FIR_FUNC2                                           | <b>FIR_FUNC Table</b><br><br>000 = Normal<br>001 = Prevent FLASH Loads/Load from SROM<br>010 = Load from Floppy<br>111 = Lock Console |
| J22        | 1-2 = “0”<br>2-3 = “1” | FIR_FUNC1                                           |                                                                                                                                       |
| J23        | 1-2 = “0”<br>2-3 = “1” | FIR_FUNC0                                           |                                                                                                                                       |
| J12 / J13  | 1-2<br>2-3             | Enable Flash ROM Update<br>Disable Flash ROM Update |                                                                                                                                       |



## Compaq AlphaServer ES45

The Compaq AlphaServer ES45 privateer system backplane module (CSB) contains a flash ROM that holds a SRM console firmware for Tru64 UNIX and OpenVMS. The system also has TIG, RMC and SROM code that gets loaded. The ability to write to these roms is controlled by setting jumpers J7, J19 and J20 on the CSB to pins 1-2. When ever the system board is replaced the firmware will need to be updated. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off an infoservert using the Alpha AXP System Firmware Update Utility CD
- Over the network using the .SYS firmware file.
- Off of a firmware floppy using LFU
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- From the BOOTP server (UNIX).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision by the power on display, SHOW commands or from online SDA with a CLUE CONFIG command.
- Record all console environmental variables by typing SHOW \* at the >>>.
- Determine which method and firmware version will be used to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Verify the ROM Update Jumpers are in the correct positions.
- Boot the firmware file (LFU).
- Type exit and answer Y to enter manual update mode.
- Use the list, update and verify commands at the UPD> prompt.
- When done exit from LFU.
- Reboot LFU using the device firmware file to update device firmware.
- Power off/on the machine to reload the new firmware.
- Reset any Environmental variables that were changed and reboot.

1. Get current firmware revision at power on or with console SHOW commands.

Power on display

```
SRM V2.18 CPU # 00 @ 1000 MHz
SRM program starting
Reloading SRM
```

```
SRM V2.18-F CPU # 00 @ 1000 MHz
System Bus Speed @ 0125 MHz
SRM program starting
PCI66 bus speed check
Reloading SRM
```

```
SRM V2.18-F CPU # 00 @ 1000 MHz
System Bus Speed @ 0125 MHz
SRM program starting
PCI66 bus speed check
Starting secondary on CPU #1
Starting secondary on CPU #2
Starting secondary on CPU #3
Bcache data tests in progress
Bcache address test in progress
CPU parity and ECC detection in progress
Bcache ECC data tests in progress
Bcache TAG lines tests in progress
```

```

Memory sizing in progress
Memory configuration in progress
Testing AAR1
Memory data test in progress
Memory address test in progress
Memory pattern test in progress
Testing AAR0
Memory data test in progress
Memory address test in progress
Memory pattern test in progress
Memory thrashing test in progress
Memory initialization
Loading console
Code execution complete (transfer control)

OpenVMS PALcode V1.93-37, Tru64 UNIX PALcode V1.88-28

starting console on CPU 0
initialized idle PCB
initializing semaphores
initializing heap
initial heap 240c0
memory low limit = 1ec000
heap = 240c0, 17fc0
initializing driver structures
initializing idle process PID
initializing file system
initializing timer data structures
lowering IPL
CPU 0 speed is 1000 MHz
create dead_eater
create poll
create timer
create powerup
access NVRAM
1024 MB of System Memory
Testing Memory
...
probe I/O subsystem
Hose 0 - PCI bus running at 33Mhz
entering idle loop
probing hose 0, PCI
probing PCI-to-ISA bridge, bus 1
bus 0, slot 8 -- pka -- NCR 53C895
bus 0, slot 9 -- eia -- DE600-AA
bus 0, slot 11 -- vga -- ELSA GLoria Synergy
bus 0, slot 16 -- dqa -- Acer Labs M1543C IDE
bus 0, slot 16 -- dqb -- Acer Labs M1543C IDE
Hose 1 - PCI bus running at 33Mhz
probing hose 1, PCI
Hose 2 - PCI bus running at 66Mhz
probing hose 2, PCI
Hose 3 - PCI bus running at 66Mhz
probing hose 3, PCI
starting drivers
initializing keyboard
starting console on CPU 1
initialized idle PCB
initializing idle process PID
lowering IPL
CPU 1 speed is 1000 MHz
create powerup
starting console on CPU 2
initialized idle PCB
initializing idle process PID
lowering IPL
CPU 2 speed is 1000 MHz
create powerup
starting console on CPU 3

```

```

initialized idle PCB
initializing idle process PID
lowering IPL
CPU 3 speed is 1000 MHz
create powerup
initializing GCT/FRU at 220000
initializing pka dqa dqb eia
Memory Testing and Configuration Status

 Array Size Base Address Intlv Mode

 0 512Mb 00000000000000000 2-Way
 1 512Mb 00000000020000000 2-Way

 1024 MB of System Memory
Testing the System
Testing the Disks (read only)
Testing the Network
AlphaServer ES45 Console V6.1-3, built on Oct 15 2001 at 14:04:04

```

```

P00>>> show version
version V6.1-3 Oct 15 2001 14:04:04

```

```

P00>>> show pal
pal OpenVMS PALcode V1.93-37, Tru64 UNIX PALcode V1.88-28

```

```

P00>>> show config
 Compaq Computer Corporation
 Compaq AlphaServer ES45 Model 2

```

```

Firmware
SRM Console: V6.1-3
PALcode: OpenVMS PALcode V1.93-37, Tru64 UNIX PALcode V1.88-28
Serial ROM: V2.18-F
RMC ROM: V1.0
RMC Flash ROM: V1.9

```

```

Processors
CPU 0 Alpha EV68CB pass 2 or 2.1 1000 MHz 8MB Bcache
CPU 1 Alpha EV68CB pass 2 or 2.1 1000 MHz 8MB Bcache
CPU 2 Alpha EV68CB pass 2 or 2.1 1000 MHz 8MB Bcache
CPU 3 Alpha EV68CB pass 2 or 2.1 1000 MHz 8MB Bcache

```

```

Core Logic
Cchip Rev 17
Dchip Rev 17
PPchip 0 Rev 17
PPchip 1 Rev 17
TIG Rev 2.6

```

```

Memory

 Array Size Base Address Intlv Mode

 0 512Mb 00000000000000000 1-Way
 1 512Mb 00000000020000000 1-Way

```

1024 MB of System Memory

```

Slot Option Hose 0, Bus 0, PCI - 33 MHz
 7 Acer Labs M1543C Bridge to Bus 1, ISA
 8 NCR 53C895 pka0.7.0.8.0 SCSI Bus ID 7
 dka0.0.0.8.0 COMPAQ BD018635CC
 dka100.1.0.8.0 COMPAQ BD018635CC
 9 DE600-AA eia0.0.0.9.0 00-50-8B-69-A3-A2
 11 ELSA GLoria Synergy vga0.0.0.11.0
 12 Yukon PCI Hot-Plug C
 16 Acer Labs M1543C IDE dqa.0.0.16.0
 dqb.0.1.16.0
 dqa0.0.0.16.0 Compaq CRD-8402B

```



|           |                                |                                       |
|-----------|--------------------------------|---------------------------------------|
|           | Option<br>Floppy               | Hose 0, Bus 1, ISA<br>dva0.0.0.1000.0 |
| Slot<br>6 | Option<br>Yukon PCI Hot-Plug C | Hose 1, Bus 0, PCI - 33 MHz           |
| Slot<br>2 | Option<br>QSW ELan3            | Hose 3, Bus 0, PCI - 66 MHz           |
| 6         | Yukon PCI Hot-Plug C           |                                       |

2. >>> show or show\* to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.

**Bootdef dev**  
**Boot\_osflags**  
**Auto\_action**

3. Check that the ROM update jumpers are enabled. Consult the service manual for their location and setting. It should be enabled by default.
4. Boot the firmware using one of the following methods.

#### **Method 1 - Load the Console Firmware Off a Local CDROM**

##### **SRM Console**

- a. Insert the CD in the local CDROM.
- b. >>> **Boot -fl 0,a0 DQA0**  
 BOOTFILE: [es45]es45\_v6\_1.exe  
**Note:** These filenames will change with different console versions.  
 UPD> See step 5 below for update procedure.

#### **Method 2 - Boot the Console CD Off of an Infoserwer**

- a. Insert CD in the Infoserwer
- b. >>> **boot eia0 -file filename** (leave off the .sys extension)

#### **Method 3 - Booting Off the Network - OpenVMS**

- a. Copy the firmware to your system from the firmware website at <http://ftp.digital.com/pub/DEC/Alpha/firmware/readmes/es45.html>
- b. Copy es45\_v6\_1.sys file to MOM\$LOAD of an existing node in the cluster
- c. Set VMS attributes on the file with the following command.  
**\$ Set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) es45\_v6\_1.sys**
- d. Enable service on that node from NCP

```
$ MC NCP
MC NCP> Show Known Circuit Characteristic
Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

Circuit = BNA-0 - Circuit name will change from system to system
State = on
Service = disabled (if enabled skip to boot command)
Counter timer = 65534
Designated router = 28.1023 (CX028A)
Cost = 4
Maximum routers allowed = 33
```

```

Router priority = 64
Hello timer = 15
Type = Ethernet
Adjacent node = 28.1023 (CX028A)
Listen timer = 30

```

```

NCP> Set Circ BNA-0 State OFF - This step will stop network activity
NCP> Set Circ BNA-0 Service Enable
NCP> Set Circ BNA-0 State ON

```

- e. >>> **boot eia0 -file es45\_v6\_1**  
 (Leave off .SYS or node that services request will get an error - **BAD MOP FID**)

#### **Method 4 - Using the Console LFU Command**

##### **Floppy**

- a. Obtain the ES45 disk1.zip file from the firmware website at <http://ftp.digital.com/pub/DEC/Alpha/firmware/readmes/v6.1/es45/disk1.zip> and save it to your PC.
- b. Insert a FAT formatted floppy in the drive
- c. Extract all the files from disk1.zip to the floppy.
- d. Insert the floppy in the ES45 DVA0 and at the P00>>> type **LFU**.
- e. The LFU utility is involved and it will indicate that Options firmware files were not found. It will prompt you for a device where the firmware is located. Type **DVA0**.
- f. When it asks for the default filename hit enter to take the default **es45fw.txt**.
- g. At the UPD> prompt type **exit** and answer **Y** to the question  
Do you want to do a manual update? [y/(n)]
- h. **List** will show current and update revisions. **Update** will load new firmware.
- i. Type **verify** to make sure the update was successful and then **exit**.

```
P00>>>lfu
```

```

Checking dqa0.0.0.16.0 for the option firmware files. . .
dqa0.0.0.16.0 has no media present or is disabled via the RUN/STOP switch
Checking dva0.0.0.1000.0 for the option firmware files. . .

```

```

Option firmware files were not found on CD or floppy.
If you want to load the options firmware,
please enter the device on which the files are located(ewa0),
or just hit <return> to proceed with a standard console update: dva0
Please enter the name of the options firmware files list, or
Hit <return> to use the default filename (es45fw.txt) :
Copying es45fw.txt from dva0. . .
Copying PRSRMROM from dva0. . .
Copying PRSROM from dva0. . .
Copying PRTIGROM from dva0. . .
Copying PRRMCROM from dva0. . .
.
.
.

```

```

UPD> exit
Do you want to do a manual update? [y/(n)] y

```

\*\*\*\*\* Loadable Firmware Update Utility \*\*\*\*\*

| Function  | Description                                                     |
|-----------|-----------------------------------------------------------------|
| Display   | Displays the system's configuration table.                      |
| Exit      | Done exit LFU (reset).                                          |
| List      | Lists the device, revision, firmware name, and update revision. |
| Readme    | Lists important release information.                            |
| Update    | Replaces current firmware with loadable data image.             |
| Verify    | Compares loadable and hardware images.                          |
| ? or Help | Scrolls this function table.                                    |

UPD> **list**

| Device | Current Revision | Filename | Update Revision |
|--------|------------------|----------|-----------------|
| SRM    | t5.9-4           | srm_fw   | v6.1-3          |
| rmc    | T1.6             | rmc_fw   | V1.9            |
| srom   | V2.14-F          | srom_fw  | V2.18-F         |
| tig    | 2.6              | tig_fw   | 2.6             |

UPD> **update**

Confirm update on:

SRM  
rmc  
srom  
tig  
[Y/(N)]y

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

SRM            Updating to v6.1-3... Verifying v6.1-3... PASSED.  
rmc            Updating to V1.9... Verifying V1.9... PASSED.  
srom           Updating to V2.18-F... Verifying V2.18-F... PASSED.  
tig            Updating to 2.6... Verifying 2.6... PASSED.

UPD> **verify**

SRM            Verifying v6.1-3... PASSED.  
rmc            Verifying V1.9... PASSED.  
srom           Verifying V2.18-F... PASSED.  
tig            Verifying 2.6... PASSED.

## **Method 5 - OpenVMS - Boot Off of a Disk - Non-System Disk and System Disk**

### **Non-System Disk**

- Locate the firmware file es45\_v6\_1.exe at the firmware website and copy it to your system
- Set the VMS attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:  
\$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) es45\_v6\_1.exe  
\$ copy/contiguous es45\_v6\_1.exe "non\_system\_disk":[directory]
- Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

### **\$ MCR Writeboot**

Update VAX portion of boot block (default is Y): **No**

Update Alpha portion of boot block (default is Y): **Yes**

Target system device (and boot file if not VMB.EXE): \$1\$dua5: [TEMP] es45\_v6\_1.exe

d. >>> **boot -fl 0,0 dua5**  
**System Disk**

- a. Only steps a and b above are used. Do **NOT** execute writeboot step c.
- b. Specify the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for the bootfile.  
>>> **b -fl 0,a dua0**  
bootfile: dua0:[sys0.sysexec]es45\_v6\_1.exe

#### Method 6 - BOOTP Network Upgrade - Tru64 UNIX

- a. Mount the Firmware Update CD using the following command:  
# **mount -rt cdf- -o noversion /dev/rz4c /mnt**
- b. Modify or Create the Client Database in the /etc/bootptab File  
**<host>:ht:<hw\_type>:ha=<hw\_addr>:bf=<filename>:ip=<ip\_addr>**  
  
where:  
**host** is the system name in /etc/hosts  
  
**hw\_type** is the hardware type. Proteon is ht = 4.  
Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.  
  
**hw\_addr** is the hardware address: use the console command show device.  
  
**filename** is the name of the default bootfile image:  
  
**ip\_addr** is the Internet protocol address of the system name in /etc/hosts.  
  
The following is an example of a bootptab file for the AlphaServer ES45:  
bigsox:ht=1:ha=08002b236423:bf=/mnt/ES45/es45\_v6\_1.exe;1:ip=16.182.0.87
- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:  
tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt  
bootps dgram udp wait root /usr/sbin/bootpd bootpd
- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**  
# **ps aux | grep ine**  
# **kill process#** <ine process number>
- e. Restart the inetd daemon:  
# **/usr/sbin/inetd**

#### **Note**

The bootpd and tftp daemon will be removed if the system is rebooted.  
Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

**Use Man bootpd and man tftpd**

- f. Enter the following command to boot from the BOOTP server:  
>>> **boot -p bootp eia0**

Should a boot file "pathname" need to be specified in must be in quotes  
>>> **boot -p bootp eia0 -file "/dir1/dir2/filename"**

- 5. At the UPD> prompt type exit then answer Y to the question Do you want to do a manual update? This is required to update TIG and RMC firmware.

UPD> exit  
Do you want to do a manual update [y/(n)]? **Y**

- 6. At the UPD> prompt type list to verify current and update versions. Then

execute Update and Verify

\*\*\*\*\* Loadable Firmware Update Utility \*\*\*\*\*

| Function  | Description                                                     |
|-----------|-----------------------------------------------------------------|
| Display   | Displays the system's configuration table.                      |
| Exit      | Done exit LFU (reset).                                          |
| List      | Lists the device, revision, firmware name, and update revision. |
| Readme    | Lists important release information.                            |
| Update    | Replaces current firmware with loadable data image.             |
| Verify    | Compares loadable and hardware images.                          |
| ? or Help | Scrolls this function table.                                    |

UPD> **list**

| Device | Current Revision | Filename | Update Revision |
|--------|------------------|----------|-----------------|
| SRM    | t5.9-4           | srm_fw   | v6.1-3          |
| rmc    | T1.6             | rmc_fw   | V1.9            |
| srom   | V2.14-F          | srom_fw  | V2.18-F         |
| tig    | 2.6              | tig_fw   | 2.6             |

UPD> **update**

Confirm update on:

SRM  
rmc  
srom  
tig

[Y/(N)]y

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

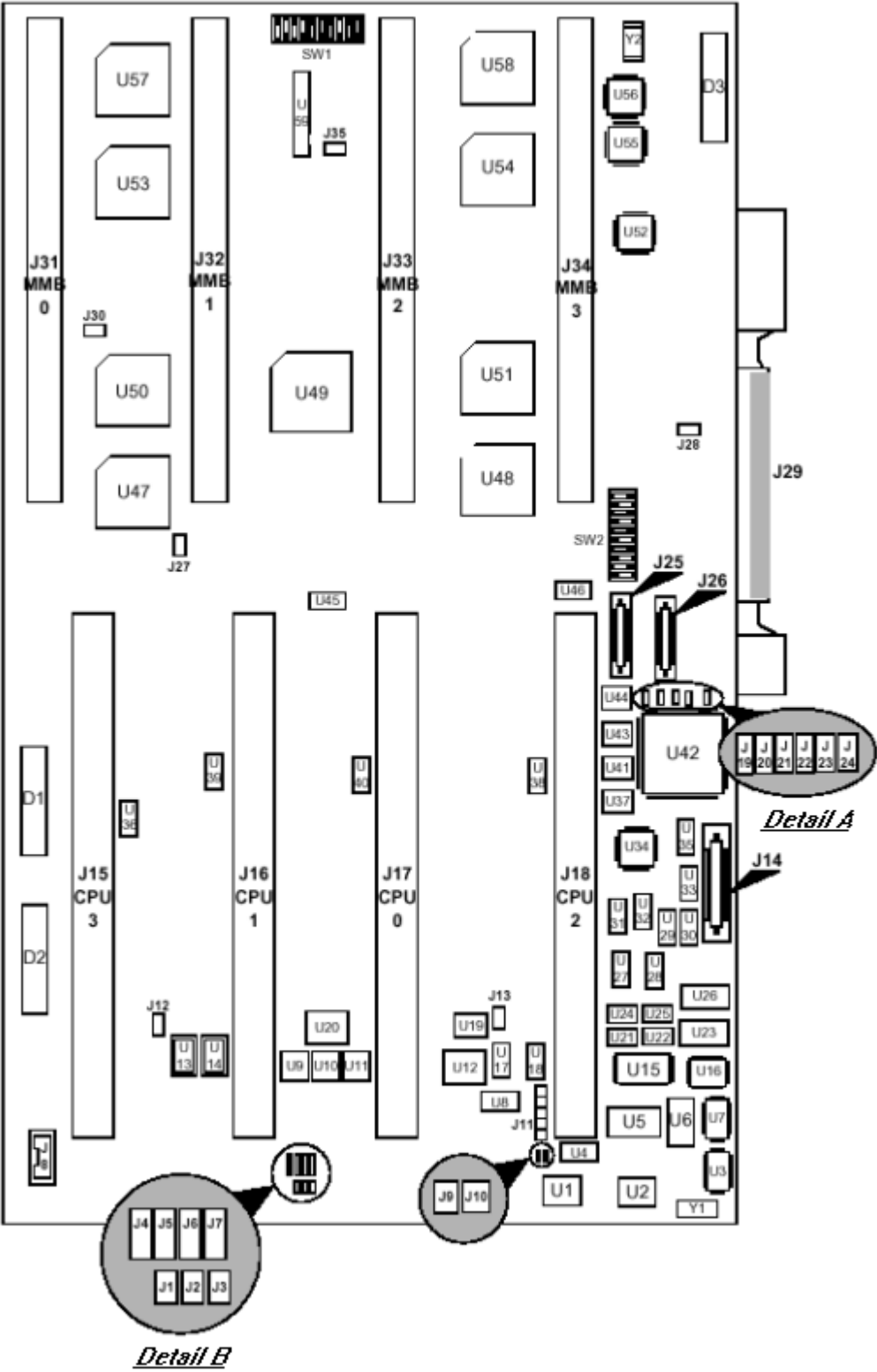
SRM            Updating to v6.1-3... Verifying v6.1-3... PASSED.  
rmc            Updating to V1.9... Verifying V1.9... PASSED.  
srom           Updating to V2.18-F... Verifying V2.18-F... PASSED.  
tig            Updating to 2.6... Verifying 2.6... PASSED.

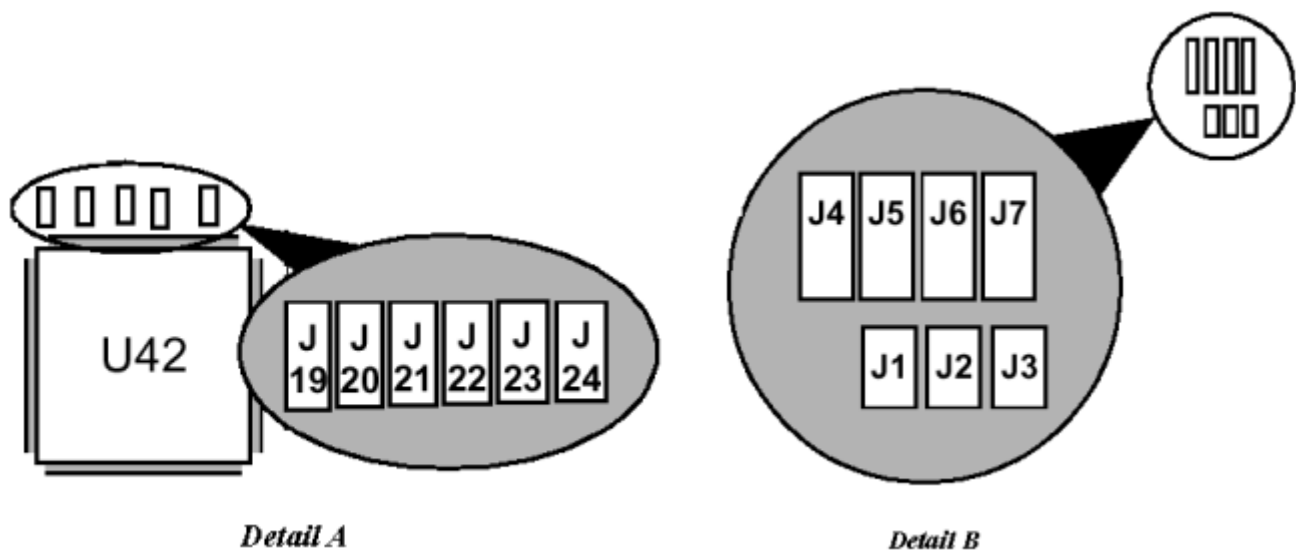
UPD> **verify**

SRM            Verifying v6.1-3... PASSED.  
rmc            Verifying V1.9... PASSED.  
srom           Verifying V2.18-F... PASSED  
tig            Verifying 2.6... PASSED.

Compaq AlphaServer ES45 Jumpers

CSB - System Backplane





| CSB Jumper | Position               | Function                                                               |                                                                                                                                                             |
|------------|------------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| J7         | 1-2<br>2-3             | Disable RMC Flash Update<br>Enable RMC Flash Update (Normal)           |                                                                                                                                                             |
| J19        | 1-2<br>2-3             | Enable TIG Flash ROM Update (Normal)<br>Disable TIG Flash ROM Update   |                                                                                                                                                             |
| J20        | 1-2<br>2-3             | Enable SROM Flash ROM Update (Normal)<br>Disable SROM Flash ROM Update |                                                                                                                                                             |
| J21        | 1-2 = “0”<br>2-3 = “1” | FIR_FUNC2                                                              | <b>FIR_FUNC Table</b><br><br>000 = Load from flash ROM (Normal)<br>001 = Load from SROM/Prevent FLASH Loads<br>010 = Load from Floppy<br>111 = Lock Console |
| J22        | 1-2 = “0”<br>2-3 = “1” | FIR_FUNC1                                                              |                                                                                                                                                             |
| J23        | 1-2 = “0”<br>2-3 = “1” | FIR_FUNC0                                                              |                                                                                                                                                             |
| J24        | 1-2<br>2-3             | Load TIG from flash ROM (Normnal)<br>Failsafe – Load TIG from SROM     |                                                                                                                                                             |

## **AlphaStation 200/250 Full Flash Systems**

The AlphaStation 200 system comes in full and half flash configurations. Half flash systems contain only 2 roms and can not have both SRM and ARC console loaded at the same time. The AlphaStation 200 and 250 full flash systems contain 4 flash roms on the motherboard. Two contain ARC console firmware for Windows NT and two contain SRM console firmware for Tru64 UNIX and OpenVMS. The ability to write to these roms is controlled on the AlphaStation 200 by jumper J6 on the motherboard/system module and by jumper J4 for the AlphaStation 250. When ever the CPU module is replaced the firmware will need to be updated. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off of an infoservert using the Alpha AXP System Firmware Update Utility CD.
- Over the network using the .SYS firmware file.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- Off of a bootable floppy OpenVMS, Unix or NT.
- From the BOOTP server (UNIX).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision by the power on display, SHOW commands or from online SDA with a CLUE CONFIG command.
- Record all console environmental variables by typing SHOW \* at the >>>.
- Determine which method and firmware version will be used to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Verify the ROM Update Jumpers are in the correct positions.
- Boot the firmware file (LFU).
- Use the verify and update commands at the Apu-> prompt.
- When done exit from LFU.
- Reboot LFU using the device firmware file to update device firmware.
- Power off/on the machine to reload the new firmware.
- Reset any Environmental variables that were changed and reboot.

1. Get current firmware revision at power on or with console SHOW commands.

```
Power on display
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.
ef.ee.ed.ec.eb.f4.ea.e9.e8.e7.e6.e5.e4.
X5.0-29, built on Jul 18 1995 at 16:20:48
```

```
>>> show version
Version X5.0-29 Jul 18 1995 16:20:48
```

```
>>> show pal
PAL VMS PALcode X5.48-107, OSF PALcode X1.35-76
```

```
>>> show config
Firmware
SRM Console: X5.0-29
ARC Console: 4.37
PALcode: VMS PALcode X5.48-107, OSF PALcode X1.35-76
Serial ROM: V4.6
Diag ROM: V1.6
Processor
DECchip (tm) 21064-2 166Mhz 512KB Cache
```



## MEMORY

32 Meg of System Memory  
Bank 0 = 16 Mbytes(8 MB Per Simm) Starting at 0x0  
Bank 1 = 16 Mbytes(8 MB Per Simm) Starting at 0x1000000  
Bank 2 = No Memory Detected

## PCI Bus

Bus 00 Slot 06: NCR 810 Scsi Controller  
pka0.7.0.6.0 SCSI Bus ID 7  
dka0.0.0.6.0 RZ26L  
dka400.4.0.6.0 RRD43

Bus 00 Slot 07: Intel SIO 82378

Bus 00 Slot 11: Digital ZLXp Graphics Controller

Bus 00 Slot 12: Digital DE435 Network Controller  
ewa0.0.0.12.0 08-00-2B-E2-1C-25

## ISA

| Slot | Device | Name   | Type       | Enabled | BaseAddr | IRQ | DMA |
|------|--------|--------|------------|---------|----------|-----|-----|
| 0    | 0      | MOUSE  | Embedded   | Yes     | 60       | 12  |     |
|      | 1      | KBD    | Embedded   | Yes     | 60       | 1   |     |
|      | 2      | COM1   | Embedded   | Yes     | 3f8      | 4   |     |
|      | 3      | COM2   | Embedded   | Yes     | 2f8      | 3   |     |
|      | 4      | LPT1   | Embedded   | Yes     | 3bc      | 7   |     |
|      | 5      | FLOPPY | Embedded   | Yes     | 3f0      | 6   | 2   |
| 2    | 0      | PCXBJ  | Singleport | Yes     | 530      | 9   | 0   |

2. >>> **show** or **show \*** to printout all the environmental variables. Check all customer set variables (alternate boot paths etc.). Also verify the following variables.

**Bootdef dev**  
**Boot\_osflags**  
**Auto\_action**

3. Check that the ROM update jumper is enabled. Consult the Service Manual for its location and setting. It should be enabled by default.
4. Boot the firmware using one of the following six methods.

## Method 1 - Boot the Console CD Off a Local CDROM

### SRM Console

- a. Insert the CD in the local CDROM.
- b. >>> **boot -fl 0,a DKA400**  
BOOTFILE:[alpha200]as200\_v7\_0. exe - For the AlphaStation 200 or 250
- Note:** These filenames will change with different console versions.
- Apu-> See step 5 below for update procedure.

### ARC Console

- a. Insert the CD in the local CDROM.
- b. Enter the ARC menu by typing **ARC** or initializing system if os\_type = NT
- c. Select **Supplementary Menu** and **Install new Firmware**

## Method 2 - Boot the Console CD Off of an Infoserver

- a. Insert the CD in the Infoserver
- b. >>> **boot ewa0 -file filename** (leave off the .sys extension)

## Method 3 - Booting Off the Network - OpenVMS

- a. Copy firmware.sys file to MOM\$LOAD of an existing node in the cluster
- b. Set VMS attributes on the file with the following command.  
\$ **Set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.sys**
- c. Enable service on that node from NCP

\$ **MC NCP**

MC NCP> **Show Known Circuit Characteristic**

Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

Circuit = BNA-0 - **Circuit name will change from system to system**

State = on

Service = disabled (if enabled skip to boot command)

Counter timer = 65534

Designated router = 28.1023 (CX028A)

Cost = 4

Maximum routers allowed = 33

Router priority = 64

Hello timer = 15

Type = Ethernet

Adjacent node = 28.1023 (CX028A)

Listen timer = 30

NCP> **Set Circ BNA-0 State OFF - This step will stop network activity**

NCP> **Set Circ BNA-0 Service Enable**

NCP> **Set Circ BNA-0 State ON**

- d. >>> **boot ewa0 -file filename**  
(Leave off .SYS or node that services request will get an error - **BAD MOP FID**)

## Method 4 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

### **Non-System Disk**

- a. Locate the firmware.exe file
- b. Set the VMS attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.exe**  
\$ **copy/contiguous firmware.exe "non\_system\_disk":[directory]**
- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

### **\$ MCR Writeboot**

Update VAX portion of boot block (default is Y): **No**

Update Alpha portion of boot block (default is Y): **Yes**

Target system device (and boot file if not VMB.EXE): **\$1\$dua5:[TEMP]as200\_v7\_0.exe**

- d. >>> **boot -fl 0,0-dua5**

## System Disk

- a. Only steps a and b above are used. Do **NOT** execute writeboot step c.
- b. Specify the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for the bootfile.  
    >>> **b -fl 0,a dua0**  
    bootfile: **dua0:[sys0.sysexec]as200\_v7\_0.exe**

## Method 5 - Boot Off of a Bootable Floppy

### OpenVMS AXP

- a. Init and mount to floppy. Create a directory and copy the firmware to the Floppy with the following commands.  
    \$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) as200\_v7\_0.exe**  
    \$ **init/dens=HD/index=begin dva0: fwupdate**  
    \$ **mount dva0: fwupdate**  
    \$ **create/dir dva0:[ALPHA200]**  
    \$ **copy/contiguous as200\_v7\_0.exe dva0:[ALPHA200]fwupdate.exe**
- b. **MCR Writeboot**  
    Update VAX portion of boot block (default is Y): **No**  
    Update Alpha portion of boot block (default is Y):**Yes**  
    [enter AXP bootfile:] **dva0:[ALPHA200]fwupdate.exe**
- c. Dismount the disk and shutdown VMS.  
    \$ **dismount dva0:**
- d. Insert the floppy on the target system and boot it from the >>>.  
    >>> **boot dva0**

### Tru64 UNIX

- a. Go to the Digital Internet firmware site at  
    <http://ftp.digital.com/pub/Digital/Alpha/firmware/>
- b. Copy the firmware.exe file from the Alpha200 directory to your system and Rename it fwupdate.exe
- c. Download the file mkbootfirm.tar from the firmware website.  
    <ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/mkbootfirm.tar>  
  
    You can untar mkbootfirm on your target Tru64 UNIX system with the command:  
    **# tar xvf mkbootfirm.tar**
- d. Make sure you have a floppy that has been low-level formatted.  
    For example, to low-level format a floppy in drive 0:  
    **fddisk -fmt /d-v/rfd0a**
- e. Change default to directory with mkbootfirm.exe  
    **cd mkbootfirm**
- f. Run mkbootfirm on the .exe firmware image that you downloaded. mkbootfirm uses a .exe firmware image to create a file that can be dd'd to floppy. The following command will create a bootable floppy from a downloaded .exe firmware image:  
    **./mkbootfirm fwupdate.exe | dd of=/dev/rfd0c bs=64k**  
    **NOTE:** Assumes mkbootfirm.exe is in current directory and floppy is in drive 0.
- g. Insert the floppy on the target system and boot it from the SRM console:  
    >>> **boot dva0**

## Windows NT

- a. Copy the firmware file to a FAT formatted floppy with the update image filename of a:\fwupdate.exe.
- b. Shut down NT and from the NT Console menu, select "Install" new firmware".

## Method 6 - BOOTP Network Upgrade - Tru64 UNIX

- a. Mount the Firmware Update CD using the following command:  
`# mount -rt cdf- -o noversion /dev/rz4c /mnt`
- b. Modify or Create the Client Database in the /etc/bootptab File  
`<host>:ht:<hw_type>:ha=<hw_addr>:bf=<filename>:ip=<ip_addr>`  
  
where:  
`host` is the system name in /etc/hosts  
  
`hw_type` is the hardware type. Proteon is ht = 4.  
Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.  
  
`hw_addr` is the hardware address: use the console command show device.  
  
`filename` is the name of the default bootfile image:  
  
`ip_addr` is the Internet protocol address of the system name in /etc/hosts.  
  
The following is an example of a bootptab file for both the AlphaServer 200 and 250 machines:  
bigsox:ht=1:ha=08002b236423:bf=/mnt/ALPHA200/as200\_v7\_0.EXE;1:ip=16.182.0.87
- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:  
`tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt`  
`bootps dgram udp wait root /usr/sbin/bootpd bootpd`
- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**  
`# ps aux | grep ine`  
`# kill process# <ine process number>`
- e. Restart the inetd daemon:  
`# /usr/sbin/inetd`

### **Note**

The bootpd and tftp daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

**Use Man bootpd and man tftpd**

- f. Enter the following command to boot from the BOOTP server:  
`>>> boot -p boot- ewa0`  
  
Should a boot file "pathname" need to be specified in must be in quotes  
`>>> boot -p boot- ewa0 -file "-dir1/dir2/filename"`

5. Update the firmware from the Apu-> prompt

```
Apu-> update
APU-I ARE YOU READY TO PROGRAM (SRM) ROM DEVICE ? (Y/N) y
APU-I PRECHARGING (SRM) ROM DEVICE
APU-I ERASING (SRM) ROM DEVICE
APU-I PROGRAMMING (SRM) ROM DEVICE
APU-I VERIFY LOADED (SRM) ROM IMAGE
APU-I VERIFY LOADED (SRM) ROM IMAGE DONE
APU-I PROGRAMMING (SRM) ROM COMPLETED
APU-I PRECHARGING (ARC /AlphaBIOS) ROM DEVICE
APU-I ERASING (ARC /AlphaBIOS) ROM DEVICE
APU-I PROGRAMMING (ARC /AlphaBIOS) ROM DEVICE
APU-I VERIFY LOADED (ARC /AlphaBIOS) ROM IMAGE
APU-I VERIFY LOADED (ARC /AlphaBIOS) ROM IMAGE DONE
APU-I PROGRAMMING (ARC /AlphaBIOS) ROM COMPLETED
Apu->
Apu-> exit
Hard Reset or ...Cycle Power ...
```

6. Verify that update was successful

```
Apu-> verify
SRM ROM verify successful
ARC /AlphaBIOS ROM verify successful
```

7. Power cycle the machine to load console firmware. If you are updating device firmware, proceed to step 8.

8. Update the option firmware. The options supported for update in the V5.9 CD firmware version are the PCI options DEFPA (FDDI), KZPSA (SCSI) and the EISA option DEFEA (FDDI).

a. Boot the Option firmware file.

```
>>> boot -fl 0,a- DKA400
Bootfile: [ALPHA200]as200_pci_v1_4.exe for the AlphaStation 200 and 250
```

This filename will change with each new firmware release.

\*\*\* PCI/EISA Loadable Firmware Update Utility V6.0 \*\*\*

| Function  | Description                                                     |
|-----------|-----------------------------------------------------------------|
| Display   | Displays the system's configuration table.                      |
| Exit      | Done exit LFU (reset.)                                          |
| List      | Lists the device, revision, firmware name, and update revision. |
| Update    | Replaces current firmware with loadable data image.             |
| Verify    | Compares loadable and hardware images.                          |
| ? or Help | Scrolls this function table.                                    |

```
UPD> list
```

| Device | Current Revision | Filename | Update Revision |
|--------|------------------|----------|-----------------|
| fwa0   | 2.46             | dfxaa_fw | 3.20            |
| pka0   | A06              | kzpsa_fw | A12             |

```
UPD> update * or update
Will update all LFU supported devices found in this system
```

```
UPD> update pka0 - will update device PKA0
Confirm update on:
pka0
[Y/(N)]y
```

```
WARNING: updates may take several minutes to complete for
each device.
```

```
DO NOT ABORT!
```

```
pka0 Updating to A12... Verifying A12... PASSED.
```

```
UPD> update fwa0 -path m-pd1:new_firm/eza0
Will update the device named fwa0 with firmware NEW_FIRM from the network.
```

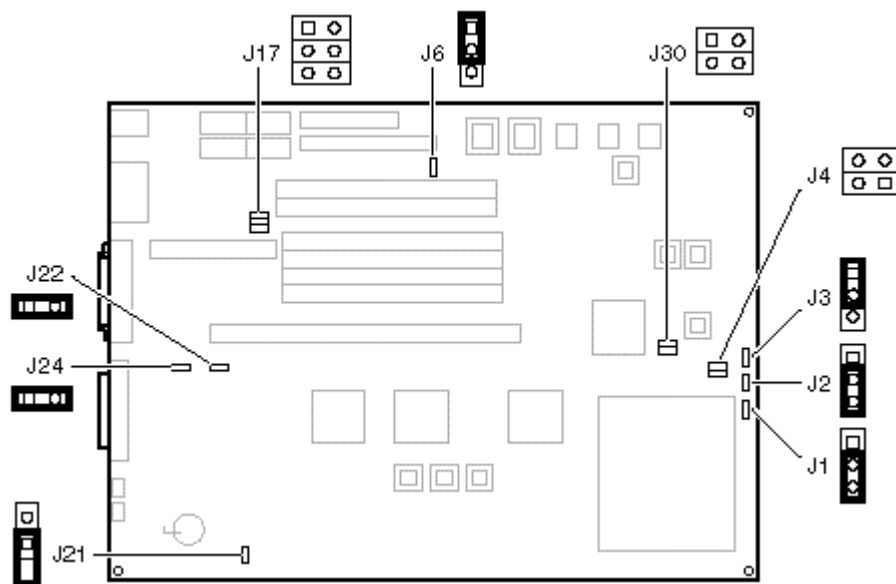
```
UPD>verify
fwa0 Verifying 3.20... PASSED.
pka0 Verifying A12... PASSED.
```

9. Power cycle the machine to load console firmware then reset any environmental variables that changed, init and reboot.



## AlphaStation 200 Jumpers

### Motherboard

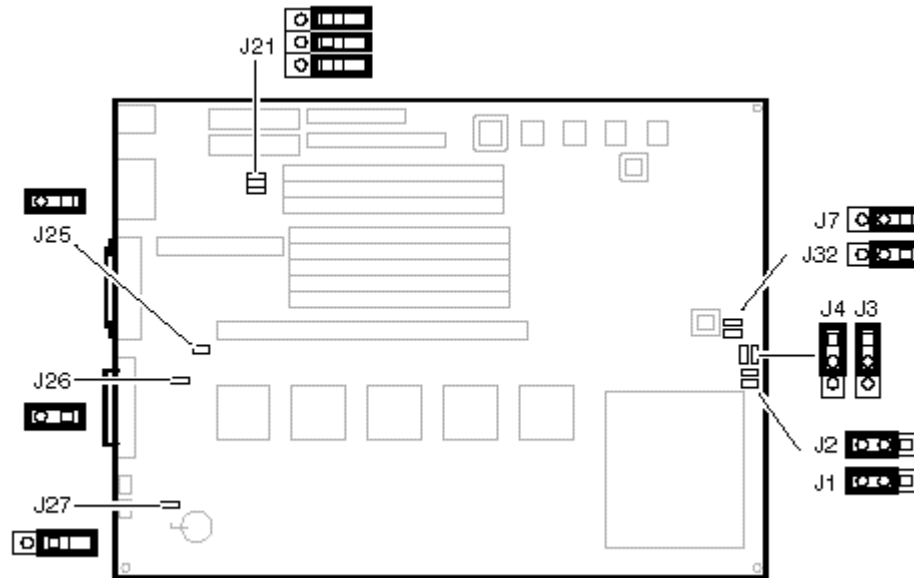




| AlphaStation 200 Motherboard Jumper |                                                                          |                                                             |                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Jumper                              | Setting                                                                  | Function                                                    | Description                                                                                                                                                                                                                                                                                                                                                           |
| J1                                  | (1 to 2)                                                                 | Mini-console.                                               | The position of J1 determines whether the SROM code goes to the SROM mini-console (for manufacturing use) or passes control to the next stage of initialization, the DROM code.                                                                                                                                                                                       |
|                                     | (2 to 3) (D)                                                             | Jump to main console.                                       |                                                                                                                                                                                                                                                                                                                                                                       |
| J2                                  | (1 to 2)                                                                 | Boot floppy.                                                | The DROM code uses J2 to determine whether an image from a floppy disk or the flashROM containing the console firmware should be loaded into memory and started.                                                                                                                                                                                                      |
|                                     | (2 to 3) (D)                                                             | Normal (flashROM load).                                     |                                                                                                                                                                                                                                                                                                                                                                       |
| J3                                  | (1 to 2) (D)<br>(2 to 3)                                                 | Reset.<br>Halt Interrupt Request.                           | The front-panel push button can be set to cause either a Reset or a Halt Interrupt Request.                                                                                                                                                                                                                                                                           |
| J4                                  | (1 to 2) and<br>(3 to 4)                                                 | PLL clock source.                                           | This jumper is used to select the clock source.                                                                                                                                                                                                                                                                                                                       |
|                                     | Not installed (D)                                                        | Oscillator clock                                            | The AlphaStation 200 Series system uses the oscillator as the clock source.                                                                                                                                                                                                                                                                                           |
| J6                                  | (1 to 2) (D)<br>2 to 3)                                                  | Enables flashROM writes.<br>Disables writes.                | The J6 jumper can be used to prevent writes to the flashROMs. Typically writes are enabled.                                                                                                                                                                                                                                                                           |
| J17                                 | (1 to 2)<br>(3 to 4)<br>(5 to 6)                                         | Keyboard controller inputs.                                 | All are unused.                                                                                                                                                                                                                                                                                                                                                       |
| J21                                 | (1 to 2)                                                                 | Disables sensing for presence of external cable.            | J21 controls the automatic SCSI bus terminator. If an external SCSI cable is attached to the SCSI connector, the automatic SCSI terminator turns off. The SCSI bus must be terminated at the end of the external bus. When sensing is disabled (J21 1 to 2 installed), an external SCSI terminator is <i>required</i> , even if no external SCSI devices are present. |
|                                     | Hang Off (D)                                                             | Enables sensing for the presence of an external SCSI cable. | If a cable is present, the SCSI bus must be terminated at the end of the external bus.                                                                                                                                                                                                                                                                                |
| J22                                 | (1 to 2) (D)<br>Removed                                                  | 87332 Super I/O chip.<br>87312 Super I/O chip.              | J22 is installed when the 87332 Super I/O chip is used. This chip supports enhanced parallel port operations.                                                                                                                                                                                                                                                         |
| J24                                 | (1 to 2) (D)<br>Removed                                                  | 87332 Super I/O chip.<br>87332 Super I/O chip.              | J24 is installed when the 87332 Super I/O chip is used. This chip supports enhanced parallel port operations.                                                                                                                                                                                                                                                         |
| J30                                 | (1 to 2) installed<br>(1 to 2) removed<br>(3 to 4) <b>DO NOT INSTALL</b> | 233 MHZ<br>166 MHZ<br>Always removed (selects 2X clock)     |                                                                                                                                                                                                                                                                                                                                                                       |

## AlphaStation 250 Jumpers

### Motherboard



| Jumper | Pins                                                                                       | Function                                                                                                   | Description                                                                                                                                                                                                                                                                                                                                                                     |
|--------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| J1     | (1 to 2)<br>(2 to 3) (D)                                                                   | Mini-console<br>Jump to main console                                                                       | The position of J1 determines whether the SROM code goes to the SROM mini-console (for manufacturing use) or passes control to the next stage of initialization, the DROM code.                                                                                                                                                                                                 |
| J2     | (1 to 2)<br>(2 to 3) (D)                                                                   | Boot floppy<br>Normal (flashROM load)                                                                      | The DROM code uses J2 to determine whether an image from a floppy disk or the flashROM containing the console firmware should be loaded into memory and started.                                                                                                                                                                                                                |
| J3     | (1 to 2) (D)<br>(2 to 3)                                                                   | Reset<br>Halt Interrupt Request                                                                            | The front-panel push button can be set to cause either a Reset or a Halt Interrupt Request.                                                                                                                                                                                                                                                                                     |
| J4     | (1 to 2) (D)<br>(2 to 3)                                                                   | Enables flashROM writes<br>Disables writes                                                                 | The J4 jumper can be used to prevent writes to the flashROMs. Typically, writes are left enabled.                                                                                                                                                                                                                                                                               |
| J7     | (1 to 2) (D)<br>(2 to 3)                                                                   | 267 MHz CPU<br>Not used                                                                                    | The J7 as well as the J32 jumpers are used to set the CPU clock rate.                                                                                                                                                                                                                                                                                                           |
| J21    | (1 to 2)<br>(3 to 4)<br>(5 to 6)<br><br>Hang off 1 (D)<br>Hang off 3 (D)<br>Hang off 5 (D) | Not used                                                                                                   | J21 hold three jumpers Currently all are unused. The three jumper pin blocks are hung off pin 1, pin3 and pin5.                                                                                                                                                                                                                                                                 |
| J25    | (1 to 2) (D)<br>Removed                                                                    | 87332 Super I/O chip<br>87312 Super I/O chip                                                               | J25 is installed when the 87332 Super I/O chip is used. This chop supports enhanced parallel port operations                                                                                                                                                                                                                                                                    |
| J26    | (1 to 2) (D)<br>Removed                                                                    | 87332 Super I/O chip<br>87312 Super I/O chip                                                               | J26 is installed when the 87332 Super I/O chip is used. This chop supports enhanced parallel port operations                                                                                                                                                                                                                                                                    |
| J27    | (1 to 2)<br><br>Hang off 1 (D)                                                             | Disables sensing for presence of external cable<br><br>Enables sensing for presence of external SCSI cable | J27 controls the automatic SCSI bus terminator. If an external SCSI cable is attached to the SCSI connector, the automatic SCSI terminator turns off. Therefore, the SCSI bus must be terminated at the end of the external bus. When sensing is disabled (J27 1 to 2 installed), an external SCSI terminator is always required, even if no external SCSI devices are present. |
| J32    | (1 to 2) (D)<br>(2 to 3)                                                                   | 267 MHz CPU<br>Not used                                                                                    | The J32 as well as the J7 jumpers are used to set the CPU clock rate.                                                                                                                                                                                                                                                                                                           |

(D) = Default setting



## AlphaStation 200/255 Half Flash Systems

The AlphaStation 200 system comes in full and half flash configurations. The AlphaStation 255 only comes in a half flash configuration. Half flash systems contain only 2 roms on the motherboard and can not have both SRM and ARC console loaded at the same time. The ability to write to these roms is controlled on the AlphaStation 200 by jumper J6 on the motherboard/system module and by switch 3 on the AlphaStation 255. When ever the CPU module is replaced the firmware will need to be updated. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off of an infoservert using the Alpha AXP System Firmware Update Utility CD.
- Over the network using the .SYS firmware file.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- Off of a bootable floppy OpenVMS, Unix or NT.
- From the BOOTP server (Unix).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision by the power on display, SHOW commands or from online SDA with a CLUE CONFIG command.
- Record all console environmental variables by typing SHOW \* at the >>>.
- Determine the method and firmware version will be used to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Verify the ROM Update Jumpers are in the correct positions.
- Boot the firmware file (LFU).
- Use the verify and update commands at the Apu-> prompt.
- When done exit from LFU.
- Reboot LFU using the device firmware file to update device firmware.
- Power off/on the machine to reload the new firmware.
- Reset any Environmental variables that were changed and reboot.

1. Get current firmware revision at power on or with console SHOW commands.

```
Power on display
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.
ef.ee.ed.ec.eb.f4.ea.e9.e8.e7.e6.e5.e4.
X6.3-4, built on Nov 20 1996 at 09:41:23
```

```
>>> show version
Version X6.3-4 Nov 20 1996 09:41:23
```

```
>>> show pal
PAL VMS PALcode X1.18-0, OSF PALcode X1.21-0
```

```
>>>show config
Firmware
SRM Console: X6.3-4
show_arc: ARC Console is not found
PALcode: VMS PALcode X1.18-0, OSF PALcode X1.21-0
Serial ROM: V1.11
Diag ROM: V1.5
Processor
DECchip (tm) 21064-2 Pass 4 232Mhz 1MByte Cache
```

## MEMORY

128 Meg of System Memory  
Bank 0 = 128 Mbytes

## PCI Bus

Bus 00 Slot 06: NCR 810 Scsi Controller  
pka0.7.0.6.0 SCSI Bus ID 7  
dka0.0.0.6.0 RZ26L  
dka400.4.0.6.0 RRD43

Bus 00 Slot 07: Intel SIO 82378

Bus 00 Slot 11: Digital ZLXp Graphics Controller

Bus 00 Slot 12: Digital DE435 Network Controller  
ewa0.0.0.12.0 08-00-2B-E2-1C-25

## ISA

| Slot | Device | Name   | Type       | Enabled | BaseAddr | IRQ | DMA |
|------|--------|--------|------------|---------|----------|-----|-----|
| 0    | 0      | MOUSE  | Embedded   | Yes     | 60       | 12  |     |
|      | 1      | KBD    | Embedded   | Yes     | 60       | 1   |     |
|      | 2      | COM1   | Embedded   | Yes     | 3f8      | 4   |     |
|      | 3      | COM2   | Embedded   | Yes     | 2f8      | 3   |     |
|      | 4      | LPT1   | Embedded   | Yes     | 3bc      | 7   |     |
|      | 5      | FLOPPY | Embedded   | Yes     | 3f0      | 6   | 2   |
| 2    | 0      | PCXBJ  | Singleport | Yes     | 530      | 9   | 0   |

2. >>> **show** or **show \*** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.

**Bootdef dev**  
**Boot\_osflags**  
**Auto\_action**

3. Check that the ROM update jumper is enabled. Consult the Service Manual for its location and setting. It should be enabled by default.
4. Boot the firmware using one of the following six methods.

### Method 1 - Load the Console Firmware Off a Local CDROM

#### SRM Console

- a. Insert the CD in the local CDROM.

- b. >>> **boot -fl 0,a- DKA400**

BOOTFILE: [alpha200]as200\_v7\_0.exe - for the AlphaStation 200  
[alpha255]as255\_v8\_1.exe - for the AlphaStation 255

**Note:** These filenames will change with different console versions.

Apu-> See step 5 below for update procedure.

#### ARC Console

- a. Insert the CD in the local CDROM.

- b. Enter the ARC menu by typing **ARC** or initializing system if os\_type = NT

- c. Select **Supplementary Menu** and **Install new Firmware**

### Method 2 - Boot the Console CD Off of an Infoserver

- a. Insert the CD in the Infoserver

- b. >>> **boot ewa0 -file filename** (leave off the .sys extension)

### Method 3 - Booting off the Network - OpenVMS

- a. Copy firmware.sys file to MOM\$LOAD of an existing node in the cluster
- b. Set the VMS attributes on the file with the following commands.  
\$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.sys
- c. Enable service on that node from NCP  
\$ MC NCP  
MC NCP> Show Known Circuit Characteristic  
Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41  
  
Circuit = BNA-0 - Circuit name will change from system to system  
State = on  
Service = disabled (if enabled skip to boot command)  
Counter timer = 65534  
Designated router = 28.1023 (CXO28A)  
Cost = 4  
Maximum routers allowed = 33  
Router priority = 64  
Hello timer = 15  
Type = Ethernet  
Adjacent node = 28.1023 (CXO28A)  
Listen timer = 30  
  
NCP> Set Circ BNA-0 State OFF - This step will stop network activity  
NCP> Set Circ BNA-0 Service Enable  
NCP> Set Circ BNA-0 State ON
- d. >>> boot ewa0 -file f-lename  
(Leave off .SYS or node that services request will get error - BAD MOP FID)

### Method 4 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

#### Non-System Disk

- a. Locate the firmware.exe file
- b. Set the VMS attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:  
\$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.exe  
\$ copy/contiguous firmware.exe "non\_system\_disk":[directory]
- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

#### \$ MCR Writeboot

Update VAX portion of boot block (default is Y): No

Update Alpha portion of boot block (default is Y): Yes

Target system device (and boot file if not VMB.EXE): \$1\$dua5:[temp]as200\_v7\_0.exe  
as200\_v7\_0.exe for the AlphaStation 200,  
as255\_v8\_1.exe for the AlphaStation 255

- d. >>> boot -fl 0,0 dua5

#### System Disk

- a. Only steps a and b above are used. Do NOT execute writeboot step c.
- b. Specify the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for the bootfile.  
>>> b -fl 0,a- dua0  
bootfile: dua0:[sys0.sysexec]as200\_v7\_0.exe

## Method 5 - Boot Off of a bootable floppy

### OpenVMS AXP

- a. Init and mount to floppy. Create a directory and copy the firmware to the floppy with the following commands. The commands shown are for the AlphaStation 255. For the AlphaStation 200 use directory **[ALPHA200]** and file **as200\_v7\_0.exe**.

```
$ Set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) as255_v8_1.exe
$ init/dens=HD/index=begin dva0: fwupdate
$ mount dva0: fwupdate
$ create/dir dva0:[ALPHA255]
$ copy/contiguous as255_v8_1.exe dva0:[ALPHA255]fwupdate.exe
```

- b. **MCR Writeboot**

```
Update VAX portion of boot block (default is Y): No
Update Alpha portion of boot block (default is Y):Yes
[enter AXP bootfile:] dva0:[ALPHA255]fwupdate.exe
```

- c. Dismount the disk and shutdown VMS.  
**\$ dismount dva0:**
- d. Insert the floppy on the target system and boot it from the >>>.  
>>> **boot dva0**

### Tru64 UNIX

- a. Go to the Digital Internet firmware site at  
<http://ftp.digital.com/pub/Digital/Alpha/firmware/>
- b. Copy the firmware.exe file from the Alpha200 or Alpha255 directory to your system and rename it fwupdate.exe
- c. Download the file mkbootfirm.tar from the firmware website.  
<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/mkbootfirm.tar>

You can untar mkbootfirm on your target Tru64 UNIX system with the command:  
**# tar xvf mkbootfirm.tar**

- d. Make sure you have a floppy that has been low-level formatted.  
For example, to low-level format a floppy in drive 0:  
**fddisk -fmt /d-v/rfd0a**
- e. Change default to directory with mkbootfirm.exe  
**cd mkbootfirm**
- f. Run mkbootfirm on the .exe firmware image that you downloaded. Mkbootfirm uses a .exe firmware image to create a file that can be dd'd to floppy. The following command will create a bootable floppy from a downloaded .exe firmware image:  
**./mkbootfirm fwupdate.exe | dd of=/dev/rfd0c bs=64k**

**NOTE:** Assumes mkbootfirm.exe is in current directory and floppy is in drive 0.

- g. Insert the floppy on the target system and boot it from the SRM console:  
>>> **boot dva0**

### Windows NT

- a. Copy the firmware file to a FAT formatted floppy with the update image filename of a:\fwupdate.exe.
- b. Shutdown NT and from the NT Console menu, select "Install" new firmware".

## Method 6 - BOOTP Network Upgrade - Tru64 UNIX

- a. Mount the Firmware Update CD using the following command:

```
mount -rt cdf- -o noversion /dev/rz4c /mnt
```

- b. Modify or Create the Client Database in the /etc/bootptab File  
<host>:ht:<hw\_type>:ha=<hw\_addr>:bf=<filename>:ip=<ip\_addr>

where:

**host** is the system name in /etc/hosts

**hw\_type** is the hardware type. Proteon is ht = 4.

Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.

**hw\_addr** is the hardware address: use the console command show device.

**filename** is the name of the default bootfile image:

**ip\_addr** is the Internet protocol address of the system name in /etc/hosts.

The following is an example of a bootptab file for both the AlphaStation 200 and 255 machines.

```
bigsox:Ht=1:ha=08002b236423:bf=/mnt/ALPHA200/as200_v7_0.EXE;1:ip=16.182.0.87
```

```
bigsox:Ht=1:ha=08002b236423:bf=/mnt/ALPHA255/as255_v8_1.EXE;1:ip=16.182.0.87
```

- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:

```
tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt
bootps dgram udp wait root /usr/sbin/bootpd bootpd
```

- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**

```
ps aux | grep ine
```

```
kill process# <ine process number>
```

- e. Restart the inetd daemon:

```
/usr/sbin/inetd
```

### Note

The bootpd and tftp daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

**Use Man bootpd and man tftpd**

- f. Enter the following command to boot from the BOOTP server:

```
>>> boot -p boot- ewa0
```

Should a boot file "pathname" need to be specified in must be in quotes

```
>>> boot -p boot- ewa0 -file "-dir1/dir2/filename"
```

5. Update the firmware from the Apu-> prompt

Apu-> **update srm** or **update arc** - below-is an example of Update SRM

```
APU-I VERIFY LOADED ROM IMAGE
```

```
APU-I VERIFY LOADED ROM IMAGE DONE
```

```
APU-I VERIFY LOADED ROM IMAGE
```

```
APU-I VERIFY LOADED ROM IMAGE DONE
```

```
APU-I VERIFY LOADED ROM IMAGE
```

```
APU-I VERIFY LOADED ROM IMAGE DONE
```

```
APU-I *** ROMS 0,1 CONTENTS WILL BE DESTROYED ***
```

```
APU-I ARE YOU READY TO PROGRAM DEVICE ? (Y/N)Y
```

```
APU-I ROM SET NOT ERASED
```

```
APU-I PRECHARGING DEVICE
```

```
APU-I ERASING ROM DEVICE
```

```
APU-I PROGRAMMING DEVICE
```

```
APU-I ROM 0 VERIFYING ROM IMAGE
```

```
APU-I PROGRAMMING COMPLETED
```

```
SRM Rom Update Successful
```



```

Apu-> update arc - you can not do both, Only Update ARC or Update SRM
APU-I VERIFY LOADED ROM IMAGE
APU-I VERIFY LOADED ROM IMAGE DONE
APU-I VERIFY LOADED ROM IMAGE
APU-I VERIFY LOADED ROM IMAGE DONE
APU-I VERIFY LOADED ROM IMAGE
APU-I VERIFY LOADED ROM IMAGE DONE
APU-I *** ROMS 0,1 CONTENTS WILL BE DESTROYED ***
APU-I ARE YOU READY TO PROGRAM DEVICE ? (Y/N)Y
APU-I ROM SET NOT ERASED
APU-I PRECHARGING DEVICE
APU-I ERASING ROM DEVICE
APU-I PROGRAMMING DEVICE
APU-I ROM 0 VERIFYING ROM IMAGE
APU-I PROGRAMMING COMPLETED
ARC Rom Update Successfull
Apu->
Apu-> exit
Hard Reset or ...Cycle Power ...

```

6. Verify that update was successful

```

Apu-> verify
ARC Rom Verify Successful - if ex-cuted on a Windows NT system.

```

```

Apu-> verify
SRM Rom Verify Successful - if ex-cuted on OpenVMS or Tru64 UNIX system.

```

7. Power cycle the machine to load console firmware. If you are updating device firmware, proceed to step 8.

8. Update the option firmware. The options supported for update in the V5.9 CD firmware version are the DEFPA (PCI FDDI), KZPSA (PCI SCSI) and DEFEA (EISA FDDI)

a. Boot the Option firmware file.

```

>>> boot -fl 0,a- DKA400
Bootfile:[ALPHA200]as200_pci_v1_4.exe for the AlphaStation 200
 [ALPHA255]as255_pci_v1_4.exe for the AlphaStation 255

```

This filename will change with each new firmware release.

\*\*\* PCI/EISA Loadable Firmware Update Utility V6.0 \*\*\*

| Function  | Description                                                     |
|-----------|-----------------------------------------------------------------|
| Display   | Displays the system's configuration table.                      |
| Exit      | Done exit LFU (reset.)                                          |
| List      | Lists the device, revision, firmware name, and update revision. |
| Update    | Replaces current firmware with loadable data image.             |
| Verify    | Compares loadable and hardware images.                          |
| ? or Help | Scrolls this function table.                                    |

```

UPD> list
Device Current Revision Filename Update Revision

fwa0 2.46 dfxaa_fw 3.20
pka0 A06 kzpsa_fw A12

```

```

UPD> update * or update
Will update all LFU supported devices found in this system

```

```
UPD> update pka0 - will update device PKA0
```

```
Confirm update on:
```

```
pka0
```

```
[Y/(N)]Y
```

```
WARNING: updates may take several minutes to complete for
each device.
```

```
DO NOT ABORT!
```

```
pka0 Updating to A12... Verifying A12... PASSED.
```

```
UPD> update fwa0 -path m-pd1:new_firm/eza0
```

```
Will update the device named fwa0 with firmware NEW_FIRM from the network.
```

```
UPD> verify
```

```
fwa0 Verifying 3.20... PASSED.
```

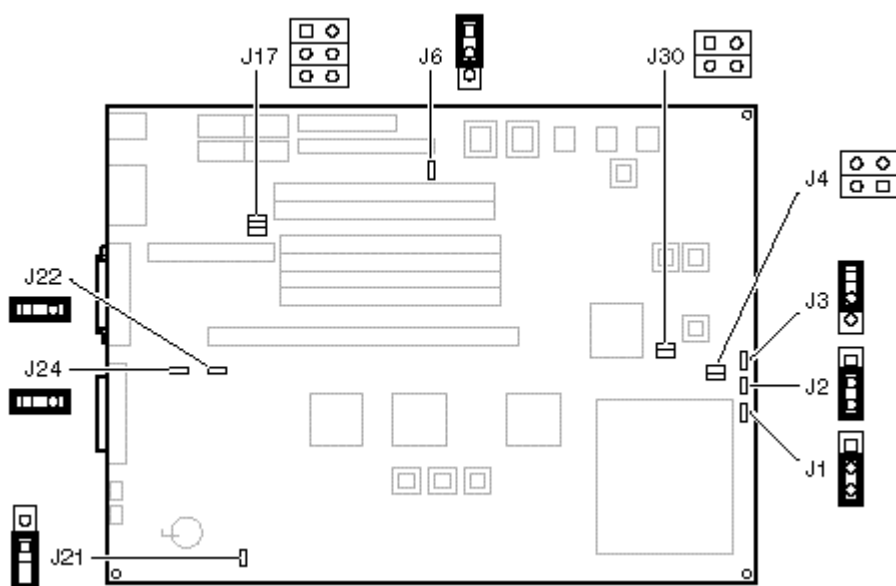
```
pka0 Verifying A12... PASSED.
```

9. Power cycle the machine to load console firmware then reset any environmental variables that changed, init and reboot.



## AlphaStation 200 Jumpers

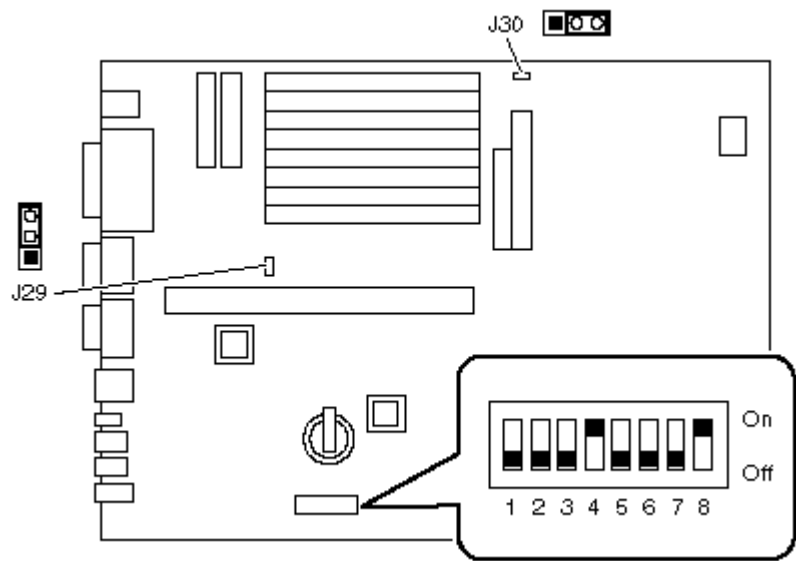
### Motherboard



| AlphaStation 200 Motherboard Jumper |                                                                          |                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Jumper                              | Setting                                                                  | Function                                                                                                                | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| J1                                  | (1 to 2)<br><br>(2 to 3) (D)                                             | Mini-console.<br><br>Jump to main console.                                                                              | The position of J1 determines whether the SROM code goes to the SROM mini-console (for manufacturing use) or passes control to the next stage of initialization, the DROM code.                                                                                                                                                                                                                                                                                     |
| J2                                  | (1 to 2)<br><br>(2 to 3) (D)                                             | Boot floppy.<br><br>Normal (flashROM load).                                                                             | The DROM code uses J2 to determine whether an image from a floppy disk or the flashROM containing the console firmware should be loaded into memory and started.                                                                                                                                                                                                                                                                                                    |
| J3                                  | (1 to 2) (D)<br>(2 to 3)                                                 | Reset.<br>Halt Interrupt Request.                                                                                       | The front-panel push button can be set to cause either a Reset or a Halt Interrupt Request.                                                                                                                                                                                                                                                                                                                                                                         |
| J4                                  | (1 to 2) and<br>(3 to 4)<br><br>Not installed (D)                        | PLL clock source.<br><br>Oscillator clock                                                                               | This jumper is used to select the clock source.<br><br>The AlphaStation 200 Series system uses the oscillator as the clock source.                                                                                                                                                                                                                                                                                                                                  |
| J6                                  | (1 to 2) (D)<br>2 to 3)                                                  | Enables flashROM writes.<br>Disables writes.                                                                            | The J6 jumper can be used to prevent writes to the flashROMs. Typically writes are enabled.                                                                                                                                                                                                                                                                                                                                                                         |
| J17                                 | (1 to 2)<br>(3 to 4)<br>(5 to 6)                                         | Keyboard controller inputs.                                                                                             | All are unused.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| J21                                 | (1 to 2)<br><br><br><br>Hang Off (D)                                     | Disables sensing for presence of external cable.<br><br><br>Enables sensing for the presence of an external SCSI cable. | J21 controls the automatic SCSI bus terminator. If an external SCSI cable is attached to the SCSI connector, the automatic SCSI terminator turns off. The SCSI bus must be terminated at the end of the external bus. When sensing is disabled (J21 1 to 2 installed), an external SCSI terminator is <i>required</i> , even if no external SCSI devices are present.<br><br>If a cable is present, the SCSI bus must be terminated at the end of the external bus. |
| J22                                 | (1 to 2) (D)<br>Removed                                                  | 87332 Super I/O chip.<br>87312 Super I/O chip.                                                                          | J22 is installed when the 87332 Super I/O chip is used. This chip supports enhanced parallel port operations.                                                                                                                                                                                                                                                                                                                                                       |
| J24                                 | (1 to 2) (D)<br>Removed                                                  | 87332 Super I/O chip.<br>87332 Super I/O chip.                                                                          | J24 is installed when the 87332 Super I/O chip is used. This chip supports enhanced parallel port operations.                                                                                                                                                                                                                                                                                                                                                       |
| J30                                 | (1 to 2) installed<br>(1 to 2) removed<br>(3 to 4) <b>DO NOT INSTALL</b> | 233 MHZ<br>166 MHz<br>Always removed (selects 2X clock)                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

AlphaStation 255 Jumpers

Motherboard



| Switch | Setting |     |     | Function                                      | Description                                                                                                                                                                                                                                                                                                                   |
|--------|---------|-----|-----|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1-2    | OFF     | OFF |     | Normal                                        | Switches 1 and 2 are the config switches. An adapter is required to communicate with the SROM code.<br>To reset the RTC/NRAM: <ul style="list-style-type: none"> <li>o Set 1 and 2 ON</li> <li>o Power On System to Console code</li> <li>o Power Off System</li> <li>o Set 1 and 2 Off</li> <li>o Power On System</li> </ul> |
|        | ON      | OFF |     | Stop at SROM prompt                           |                                                                                                                                                                                                                                                                                                                               |
|        | OFF     | ON  |     | Boot from Floppy (including Fail-safe Loader) |                                                                                                                                                                                                                                                                                                                               |
|        | ON      | ON  |     | Reset RTC and NRAM                            |                                                                                                                                                                                                                                                                                                                               |
| 3      | OFF     |     |     | Write enabled (default)                       | Switch 3 is the flashROM write protect switch. It should always be off.                                                                                                                                                                                                                                                       |
|        | ON      |     |     | Writes disabled                               |                                                                                                                                                                                                                                                                                                                               |
| 4      | OFF     |     |     | Halt interrupt request                        | The Front-Panel push button can be set to cause either a RESET orHALT.                                                                                                                                                                                                                                                        |
|        | ON      |     |     | Reset                                         |                                                                                                                                                                                                                                                                                                                               |
| 5      | OFF     |     |     | Enable TC sound (Default)                     | Switch 5 controls the use of timer/counter (TC) generated sound. The default position (Off) is used when no sound driver is installed. There is no volume control for TC sound                                                                                                                                                |
|        | ON      |     |     | Diabiles TC sound                             |                                                                                                                                                                                                                                                                                                                               |
| 6-8    | On      | On  | On  | 133                                           | Switches 6 , 7 , 8, are used for to set the CPU clock rate. You can set the system to run on a slower rate. How ever, faster rates require an upgrade which replaces the interrupt PAL.                                                                                                                                       |
|        | Off     | On  | On  | 166                                           |                                                                                                                                                                                                                                                                                                                               |
|        | On      | Off | On  | 200                                           |                                                                                                                                                                                                                                                                                                                               |
|        | Off     | Off | On  | 233                                           |                                                                                                                                                                                                                                                                                                                               |
|        | On      | On  | Off | 266                                           |                                                                                                                                                                                                                                                                                                                               |
|        | Off     | On  | Off | 300                                           |                                                                                                                                                                                                                                                                                                                               |
|        | On      | Off | Off | 333                                           |                                                                                                                                                                                                                                                                                                                               |
|        | Off     | Off | Off | 366                                           |                                                                                                                                                                                                                                                                                                                               |



## AlphaServer 400 / AlphaStation 400

The AlphaServer and AlphaStation 400 systems contain 4 flash roms on the CPU module. Two contain ARC console firmware for Windows NT and two contain SRM console firmware for Tru64 UNIX and OpenVMS. The ability to write to these roms is controlled by jumper J4 on the CPU module. When ever the CPU module is replaced the firmware will need to be updated. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off of an infoserwer using the Alpha AXP System Firmware Update Utility CD.
- Over the network using the .SYS firmware file.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- Off of a bootable floppy OpenVMS, Unix or NT.
- From the BOOTP server (Unix).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision by the power on display, SHOW commands or from online SDA with a CLUE CONFIG command.
- Record all console environmental variables by typing SHOW \* at the >>>.
- Determine which method and firmware version will be used to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Verify the ROM Update Jumpers are in the correct positions.
- Boot the firmware file (LFU).
- Use the verify and update commands at the Apu-> prompt.
- When done exit from LFU.
- Reboot LFU using the device firmware file to update device firmware.
- Power off/on the machine to reload the new firmware.
- Reset any Environmental variables that were changed and reboot.

1. Get current firmware revision at power on or with console show commands.

Power on display

```
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.
ef.ee.ed.ec.eb.f4.ea.e9.e8.e7.e6.e5.e4.
X5.0-29, built on Jul 18 1995 at 16:20:48
```

```
>>> show version
```

```
Version X5.0-29 Jul 18 1995 16:20:48
```

```
>>> show pal
```

```
PAL VMS PALcode X5.48-107, OSF PALcode X1.35-76
```

```
>>> show config
```

Firmware

SRM Console: X5.0-29

ARC Console: 4.37

PALcode: VMS PALcode X5.48-107, OSF PALcode X1.35-76

Serial ROM: V3.4

Diag ROM: V1.7

Processor

DECchip (tm) 21064-2 166Mhz 512KB Cache



## MEMORY

32 Meg of System Memory  
Bank 0 = 16 Mbytes(8 MB Per Simm) Starting at 0x0  
Bank 1 = 16 Mbytes(8 MB Per Simm) Starting at 0x1000000  
Bank 2 = No Memory Detected

## PCI Bus

Bus 00 Slot 06: NCR 810 Scsi Controller  
pka0.7.0.6.0 SCSI Bus ID 7  
dka0.0.0.6.0 RZ26L  
dka400.4.0.6.0 RRD43

Bus 00 Slot 07: Intel SIO 82378

Bus 00 Slot 11: Digital ZLXp Graphics Controller

Bus 00 Slot 12: Digital DE435 Network Controller  
ewa0.0.0.12.0 08-00-2B-E2-1C-25

## ISA

| Slot | Device | Name   | Type     | Enabled | BaseAddr | IRQ | DMA |
|------|--------|--------|----------|---------|----------|-----|-----|
| 0    | 0      | MOUSE  | Embedded | Yes     | 60       | 12  |     |
|      | 1      | KBD    | Embedded | Yes     | 60       | 1   |     |
|      | 2      | COM1   | Embedded | Yes     | 3f8      | 4   |     |
|      | 3      | COM2   | Embedded | Yes     | 2f8      | 3   |     |
|      | 4      | LPT1   | Embedded | Yes     | 3bc      | 7   |     |
|      | 5      | FLOPPY | Embedded | Yes     | 3f0      | 6   | 2   |

2. >>> **show** or **show \*** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.  
**Bootdef\_dev**  
**Boot\_osflags**  
**Auto\_action**
3. Check that the ROM update jumper is enabled. Consult the Service Manual for its location and setting. It should be enabled by default.
4. Boot the firmware using one of the following six methods.

## Method 1 - Load the Console Firmware Off a Local CDROM

### SRM Console

- a. Insert the CD in the local CDROM.
- b. >>>**boot -fl 0,a DKA400**  
BOOTFILE:[**alphasv400**]asv400\_v7\_0.exe - for the AlphaServer 400  
[**alpha400**]as400\_v72\_1.exe - for the AlphaStation 400  
  
**Note:** These filenames will change with different console versions.  
  
Apu-> See step 5 below for update procedure.

### ARC Console

- a. Insert the CD in the local CDROM.
- b. Enter the ARC menu by typing >>> **SET OS\_TYPE NT** and initializing.  
If os\_type is already set to NT then it will come up into the ARC menu on powerup.
- c. Select **Supplementary Menu** and **Install new Firmware**

### Method 2 - Boot the Console CD Off of an Infoserwer

- a. Insert the CD in the Infoserwer
- b. >>> **boot ewa0 -file f-lename** (leave off the .sys extension)

### Method 3 - Booting off the Network - OpenVMS

- a. Copy firmware.sys file to MOM\$LOAD of an existing node in the cluster
- b. Set the attributes on the file with the following commands:  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.sys**
- c. Enable service on that node from NCP  
\$ **MC NCP**  
MC NCP> **Show Known Circuit Characteristic**  
  
Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41  
Circuit = BNA-0 - **Circuit name will change from system to system**  
State = on  
Service = disabled (if enabled skip to boot command)  
Counter timer = 65534  
Designated router = 28.1023 (CXO28A)  
Cost = 4  
Maximum routers allowed = 33  
Router priority = 64  
Hello timer = 15  
Type = Ethernet  
Adjacent node = 28.1023 (CXO28A)  
Listen timer = 30  
  
NCP> **Set Circ BNA-0 State OFF - This step will stop network activity**  
NCP> **Set Circ BNA-0 Service Enable**  
NCP> **Set Circ BNA-0 State ON**
- d. >>> **boot ewa0 -fi filename** (Leave off .SYS or will get error- **BAD MOP FID**)

### Method 4 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

#### **Non-System Disk**

- a. Locate the firmware.exe file
- b. Set the VMS attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.exe**  
\$ **copy/contiguous firmware.exe "non\_system\_disk":[directory]**
- c. Use Writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

#### **\$ MCR Writeboot**

Update VAX portion of boot block (default is Y): **No**

Update Alpha portion of boot block (default is Y): **Yes**

Target system device (and boot file if not VMB.EXE): **\$1\$DUA5:[TEMP]asv400\_v7\_0.exe**  
**asv400\_v7\_0.exe** for the AlphaServer 400.

**as400\_v72\_1.exe** for the AlphaStation 400

- d. >>> **boot -fl 0,0 dua5**

#### **System Disk**

- a. Only steps a and b above are used. Do NOT execute writeboot step c.

- b. Set the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for the bootfile.  
 >>> **b -fl 0,a- dua0**  
 bootfile: **dua0:[sys0.sysexec]as400\_v72\_1.exe**

## **Method 5 - Boot Off of a Bootable Floppy**

### **OpenVMS AXP**

- a. Init and mount to floppy. Create a directory and copy the firmware to the floppy with the following commands. The commands shown are for the AlphaServer 400. For the AlphaStation 400 use directory **[ALPHA400]** and file **as400\_v72\_1.exe**.  

```
$ Set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) asrv400_v6_9.exe
$ init/dens=HD/index=begin dva0: fwupdate
$ mount dva0: fwupdate
$ create/dir dva0:[alphasv400]
$ copy/contiguous asrv400_v6_9.exe dva0:[alphasv400]fwupdate.exe
```
- b. **MCR Writeboot**  
 Update VAX portion of boot block (default is Y): **No**  
 Update Alpha portion of boot block (default is Y): **Yes**  
 [enter AXP bootfile:] **dva0:[alphasv400]fwupdate.exe**
- c. Dismount the disk and shutdown VMS.  
**\$ dismount dva0:**
- d. Insert the floppy on the target system and boot it from the >>>.  
 >>> **boot dva0**

### **Tru64 UNIX**

- a. Go to the Digital Internet firmware site at  
<http://ftp.digital.com/pub/Digital/Alpha/firmware/>
  - b. Copy the firmware.exe file from the Alphasv400 or Alpha400 directory to your system and rename it fwupdate.exe
  - c. Download the file mkbootfirm.tar from the firmware website.  
<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/mkbootfirm.tar>  
  
 You can untar mkbootfirm on your target Tru64 UNIX system with the command:  
**# tar xvf mkbootfirm.tar**
  - d. Make sure you have a floppy that has been low-level formatted.  
 For example, to low-level format a floppy in drive 0:  
**fddisk -fmt /d-v/rfd0a**
  - e. Change default to directory with mkbootfirm.exe  
**cd mkbootfirm**
  - f. Run mkbootfirm on the .exe firmware image that you downloaded. Mkbootfirm uses a .exe firmware image to create a file that can be dd'd to floppy. The following command will create a bootable floppy from a downloaded .exe firmware image:  
**./mkbootfirm fwupdate.exe | dd of=/dev/rfd0c bs=64k**
- NOTE:** Assumes mkbootfirm.exe is in current directory and floppy is in drive 0.
- g. Insert the floppy on the target system and boot it from the SRM console:  
 >>> **boot dva0**

## Windows NT

- a. Copy the firmware file to a FAT formatted floppy with the update image filename of a:\fwupdate.exe.
- b. Shutdown NT and from the NT Console menu, select "Install" new firmware".

## Method 6 - BOOTP Network Upgrade - Tru64 UNIX

- a. Mount the Firmware Update CD using the following command:  
`# mount -rt cdfs -o noversion /dev/rz4c /mnt`
- b. Modify or Create the Client Database in the /etc/bootptab File  
`<host>:ht:<hw_type>:ha=<hw_addr>:bf=<filename>:ip=<ip_addr>`

where:

**host** is the system name in /etc/hosts

**hw\_type** is the hardware type. Proteon is ht = 4.

Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.

**hw\_addr** is the hardware address: use the console command show device.

**filename** is the name of the default bootfile image:

**ip\_addr** is the Internet protocol address of the system name in /etc/hosts.

The following is an example of a bootptab file for both the AlphaServer and AlphaStation 400 machines:

```
bigsox:ht=1:ha=08002b236423:bf=/mnt/ALPHASV400/asv400_v7_0.EXE;1:ip=16.182.0.87
bigsox:ht=1:ha=08002b236423:bf=/mnt/ALPHA400/as400_v72_1.EXE;1:ip=16.182.0.87
```

- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:  

```
tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt
bootps dgram udp wait root /usr/sbin/bootpd bootpd
```
- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**  

```
ps aux | grep ine
kill process# <ine process number>
```
- e. Restart the inetd daemon:  

```
/usr/sbin/inetd
```

### **Note**

The bootpd and tftpd daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

**Use Man bootpd and man tftpd**

- f. Enter the following command to boot from the BOOTP server:  

```
>>> boot -p bootp ewa0
```

Should a boot file "pathname" need to be specified in must be in quotes

```
>>> boot -p bootp ewa0 -file "/dir1/dir2/filename"
```

5. After booting the CD answer the following question

The current platform type is "AlphaStation 400".

Is this really an "AlphaServer 400"? [y/n] **yes**

6. Update the firmware from the Apu-> prompt

```
Apu-> update
APU-I ARE YOU READY TO PROGRAM (SRM) ROM DEVICE ? (Y/N) y
APU-I PRECHARGING (SRM) ROM DEVICE
APU-I ERASING (SRM) ROM DEVICE
APU-I PROGRAMMING (SRM) ROM DEVICE
APU-I VERIFY LOADED (SRM) ROM IMAGE
APU-I VERIFY LOADED (SRM) ROM IMAGE DONE
APU-I PROGRAMMING (SRM) ROM COMPLETED
APU-I PRECHARGING (ARC /AlphaBIOS) ROM DEVICE
APU-I ERASING (ARC /AlphaBIOS) ROM DEVICE
APU-I PROGRAMMING (ARC /AlphaBIOS) ROM DEVICE
APU-I VERIFY LOADED (ARC /AlphaBIOS) ROM IMAGE
APU-I VERIFY LOADED (ARC /AlphaBIOS) ROM IMAGE DONE
APU-I PROGRAMMING (ARC /AlphaBIOS) ROM COMPLETED
```

7. Verify that update was successful and exit

```
Apu-> verify
SRM ROM verify successful
ARC /AlphaBIOS ROM verify successful
```

```
Apu-> exit
```

...Please Cycle System Power ...

8. Power cycle the machine to load console firmware. If you are updating device firmware, proceed to step 9.

9. Update the option firmware. The options supported for update in the V5.9 CD firmware version are the DEFPA (PCI FDDI), KZPSA (PCI SCSI) and DEFEA (EISA FDDI)

a. Boot the Option firmware file.

```
>>> boot -fl 0,a0 DKA400
Bootfile: [alphasv400]asv400_pci_v1_4.exe for the AlphaServer 400
 [alpha400]as400_pci_v7_2.exe for the AlphaStation 400
```

This filename will change with each new firmware release.

\*\*\* PCI/EISA Loadable Firmware Update Utility V6.0 \*\*\*

```

Function Description

Display Displays the system's configuration table.
Exit Done exit LFU (reset.)
List Lists the device, revision, firmware name,
 and update revision.
Update Replaces current firmware with loadable data
 image.
Verify Compares loadable and hardware images.
? or Help Scrolls this function table.
-----\
```

```
UPD> list
Device Current Revision Filename Update Revision

fwa0 2.46 dfxaa_fw 3.20
pka0 A06 kzpsa_fw A12
```

```
UPD> update * or update
Will update all LFU supported devices found in this system
```

```
UPD> update pka0 - will update device PKA0
Confirm update on:
pka0
[Y/(N)]y
```

WARNING: updates may take several minutes to complete for  
each device.

DO NOT ABORT!

pka0                    Updating to A12...    Verifying A12...    PASSED.

UPD> **update fwa0 -path mopdl:new\_firm/eza0**

Will update the device named fwa0 with firmware NEW\_FIRM from the network.

UPD> **verify**

fwa0                    Verifying 3.20...    PASSED.

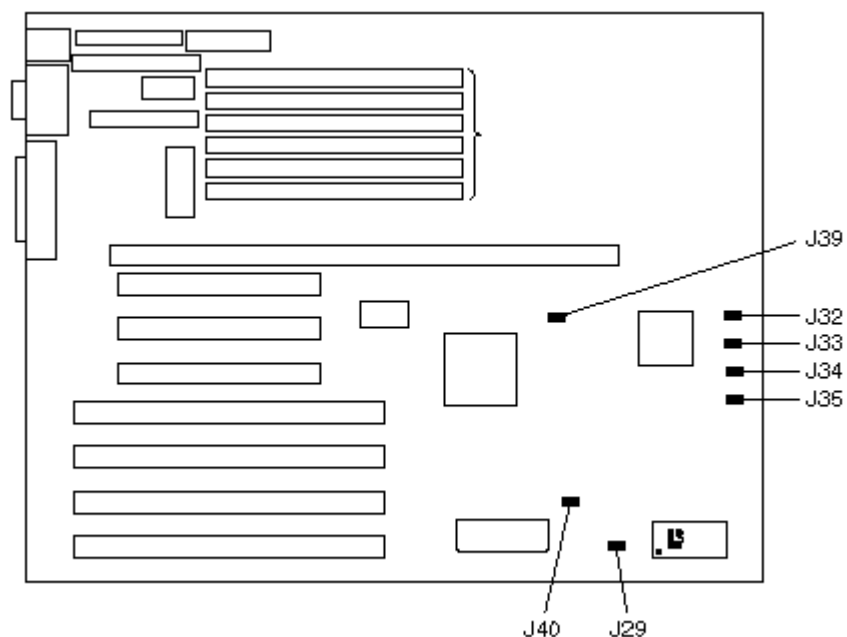
pka0                    Verifying A12...    PASSED.

10. Power cycle the machine to load console firmware then reset any environmental variables that changed, init and reboot.



## AlphaServer 400 Jumpers

### Motherboard Jumpers



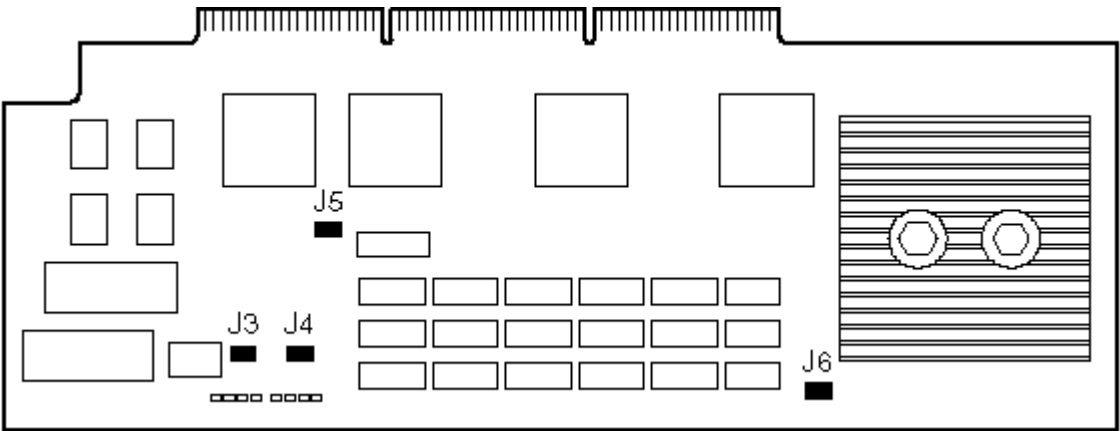
| Motherboard Jumpers |                |             |                         |
|---------------------|----------------|-------------|-------------------------|
| Jumper              | Pins 1 to 2    | Pins 2 to 3 | Function                |
| J29                 | Clear CMOS     | Normal *    | Clear CMOS              |
| J32                 | Clear Password | Normal *    | Clear Password **       |
| J33                 | Color          | Mono *      | Display Type **         |
| J34                 | Recovery Mode  | Normal *    | Recovery mode **        |
| J35                 | Enable         | Disabled *  | BIOS upgrade **         |
| J39                 | Alpha AXP *    | Unsupported | CPU selection           |
| J40                 | Disable *      | Enable      | Reprogram boot Block ** |

\* = default

\*\* = These Functions are not used in the AlphaServer 400 Series



CPU Jumpers

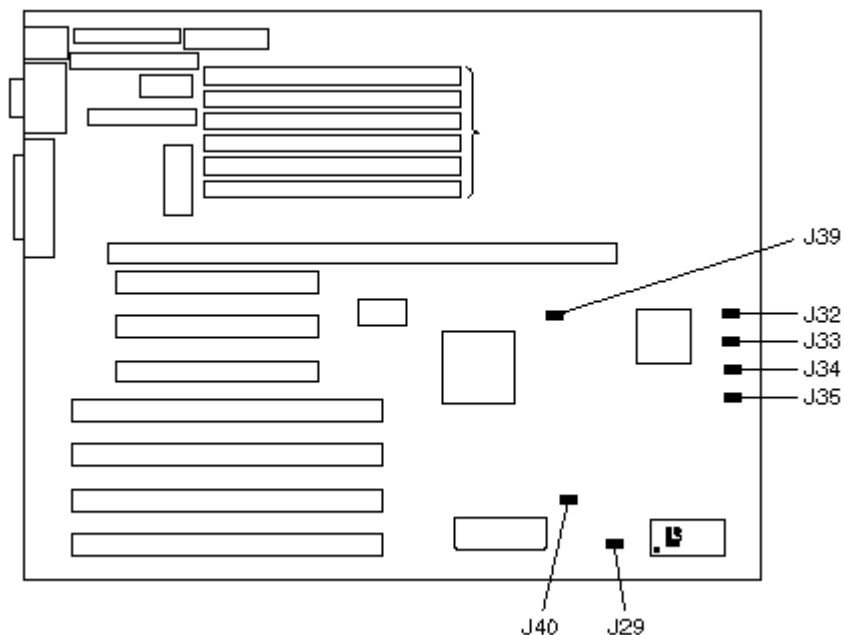


| AlphaServer 400 CPU Jumpers |                     |                       |                                                                                                    |
|-----------------------------|---------------------|-----------------------|----------------------------------------------------------------------------------------------------|
| Jumper                      | Pins 1 to 2         | Pins 2 to 3           | Function                                                                                           |
| J3                          | SROM mini-console   | Pass control to DROM* | Control whether the SROM code goes to the mini console (for manufacturing) or loads the DROM code. |
| J4                          | Enable *            | Disable               | Enables/disables Writes to FlashROM                                                                |
| J5                          | Floppy loader (FSL) | DROM Loads flashROM * | Determines DROM Load Action                                                                        |
| J6                          | Reset *             | Unsupported           | Reset/Halt Selection                                                                               |

\* = default

## AlphaStation 400 Jumpers

### Motherboard Jumpers

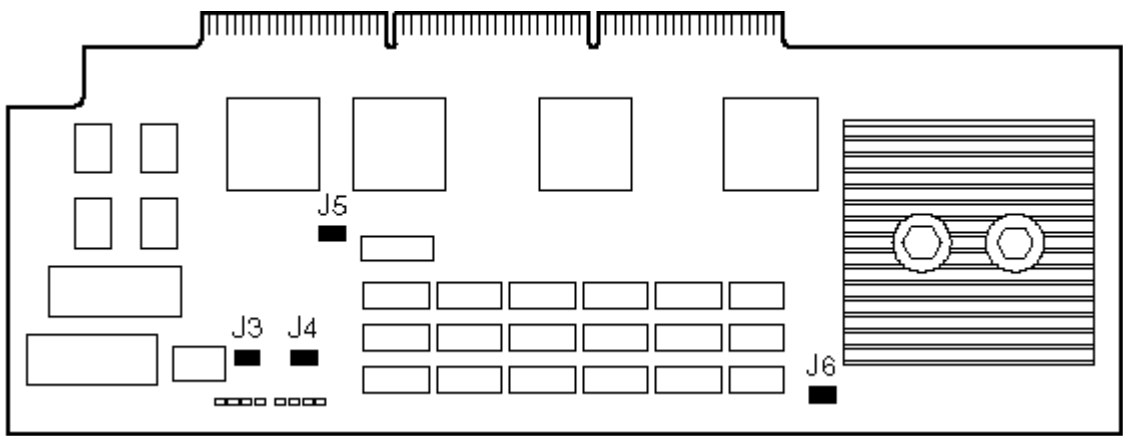


| Motherboard Jumpers |                |             |                         |
|---------------------|----------------|-------------|-------------------------|
| Jumper              | Pins 1 to 2    | Pins 2 to 3 | Function                |
| J29                 | Clear CMOS     | Normal *    | Clear CMOS              |
| J32                 | Clear Password | Normal *    | Clear Password **       |
| J33                 | Color          | Mono *      | Display Type **         |
| J34                 | Recovery Mode  | Normal *    | Recovery mode **        |
| J35                 | Enable *       | Normal      | BIOS upgrade **         |
| J39                 | Alpha AXP *    | N/A         | CPU selection           |
| J40                 | Disable *      | Enable      | Reprogram boot Block ** |

\* = default

\*\* = These Functions are not used in the AlphaStation 400 Series

Cpu Jumpers



| AlphaStation 400 CPU Jumpers |                     |                       |                                                       |
|------------------------------|---------------------|-----------------------|-------------------------------------------------------|
| Jumper                       | Pins 1 to 2         | Pins 2 to 3           | Function                                              |
| J3                           | S-Port              | Normal *              | Stay at SROM Prompt (Mini-Console) in S-Port Position |
| J4                           | Enable *            | Disable               | Enables/disables Writes to FlashROM                   |
| J5                           | Floppy loader (FSL) | DROM Loads flashROM * | Determines DROM Load Action                           |
| J6                           | Reset *             | HALT                  | Reset/Halt Selection                                  |

\* = default

## AlphaStation 500/600

The AlphaStation 500/600 systems contain 4 flash roms on the System module. Two contain ARC console firmware for Windows NT and two contain SRM console firmware for Tru64 UNIX and OpenVMS. The ability to write to these roms is controlled on the AlphaStation 500 by jumper J18 on the system module and on the AlphaStation 600 by jumper W13 on the system module. When ever the system module is replaced the firmware will need to be updated. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off of an infoserwer using the Alpha AXP System Firmware Update Utility CD.
- Over the network using the .SYS firmware file.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- Off of a bootable floppy OpenVMS, Unix or NT.
- From the BOOTP server (Unix).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision by the power on display, SHOW commands or from online SDA with a CLUE CONFIG command.
  - Record all console environmental variables by typing SHOW \* at the >>>.
  - Determine which method and firmware version will be used to do the update.
  - Print the firmware release notes for that version and system.
  - Determine if any option firmware will be upgraded.
  - Verify the ROM Update Jumpers are in the correct positions.
  - Boot the firmware file (LFU).
  - Use the verify and update commands at the Apu-> prompt.
  - When done exit from LFU.
  - Reboot LFU using the device firmware file to update device firmware.
  - Power off/on the machine to reload the new firmware.
  - Reset any Environmental variables that were changed and reboot.
1. Get the current firmware revision at power on or with console show commands.

Power on display

```
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.
ef.ee.ed.ec.eb.f4.ea.e9.e8.e7.e6.e5.e4.
Digital AlphaStation 500/600 Console V6.3-11
built on Nov 6 1996 at 14:48:02
```

```
>>> show version
```

```
Version X6.3-11 Nov 6 1996 14:48:02
```

```
>>> show pal
```

```
PAL VMS PALcode X1.18-0, OSF PALcode X1.21-0
```

```
>>> show config
```

```
Firmware
SRM Console: X6.3-11
ARC Console: 4.49
PALcode: VMS PALcode X1.18-0, OSF PALcode X1.21-0
Serial ROM: V1.2
Processor
DECchip (tm) 21164-5 Pass 4 333Mhz 96 KBytes Cache
4 MB Cache
```

## MEMORY

Memory Size = 128Mb

| Bank | Size/Sets | Base Addr | Speed |
|------|-----------|-----------|-------|
| 00   | 128Mb/1   | 000000000 | Fast  |

BCache Size = 4Mb

Tested Memory = 128Mb

## PCI Bus

Bus 00 Slot 06: DECchip 21040 Network Controller  
ewa0.0.0.6.0 00-00-FB-21-32-E8

Bus 00 Slot 07: Digital PV-PCI Graphics Controller

Bus 00 Slot 09: ISP1020 Scsi Controller  
pka0.7.0.9.0 SCSI Bus ID 7  
dka0.0.0.9.0 RZ25L  
dka400.4.0.9.0 RRD45

2. >>> **show** or **show \*** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.

**Bootdef\_dev**  
**Boot\_osflags**  
**Auto\_action**

3. Check that the ROM update jumper is enabled. Consult the Service Manual for its location and setting. It should be enabled by default.
4. Boot the firmware using one of the following methods.

## Method 1 - Load the Console Firmware Off a Local CDROM

### SRM Console

a. Insert the CD in the local CDROM.

b. >>> **Boot -fl 0,a0 DKA400**  
BOOTFILE: [alpha500]as500\_v72\_2.exe - for the AlphaStation 500  
[alpha600]as600\_v72\_2.exe - for the AlphaStation 600

**Note:** These filenames will change with different console versions.

Apu-> See step 5 below for update procedure.

### ARC Console

a. Insert the CD in the local CDROM.

b. Enter the ARC menu by typing **ARC** or initializing system if os\_type = NT

c. Select " **Supplementary Menu** and **Install new Firmware**

## Method 2 - Boot the Console CD Off of an Infomserver

a. Insert CD in the Infomserver

b. >>> **boot ewa0 -file filename** (leave off the .sys extension)

### Method 3 - Booting Off the Network - OpenVMS

- a. Copy the firmware.sys file to MOM\$LOAD of an existing node in the cluster
- b. Set the attributes on the file with the following commands:  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.sys**
- c. Enable service on that node from NCP

\$ **MC NCP**

MC NCP> **Show Known Circuit Characteristic**

Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

Circuit = BNA-0 - **Circuit name will change from system to system**

State = on

Service = disabled (if enabled skip to boot command)

Counter timer = 65534

Designated router = 28.1023 (CXO28A)

Cost = 4

Maximum routers allowed = 33

Router priority = 64

Hello timer = 15

Type = Ethernet

Adjacent node = 28.1023 (CXO28A)

Listen timer = 30

NCP> **Set Circ BNA-0 State OFF - This step will stop network activity**

NCP> **Set Circ BNA-0 Service Enable**

NCP> **Set Circ BNA-0 State ON**

- d. >>> **boot ewa0 -fi filename** (Leave off .SYS or will get error- BAD MOP FID)

### Method 4 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

#### **Non-System Disk**

- a. Locate the firmware.exe file
- b. Set the attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.exe**  
\$ **copy/contiguous firmware.exe "non\_system\_disk":[directory]**
- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

#### **\$ MCR Writeboot**

Update VAX portion of boot block (default is Y): **No**

Update Alpha portion of boot block (default is Y): **Yes**

Target system device (and boot file if not VMB.EXE): **\$1\$dua5:[TEMP]as500\_v72\_2.exe**

- d. >>> **boot -fl 0,0 dua5**

#### **System Disk**

- a. Only steps a and b above are used. Do NOT execute writeboot step c.
- b. Specify the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for the bootfile.  
>>> **b -fl 0,a0 dua0**  
bootfile: **dua0:[sys0.sysexec]as500\_v72\_2.exe**

## Method 5 - Boot Off of a bootable floppy

### OpenVMS AXP

- a. Init and mount to floppy. Create a directory and copy the firmware to the Floppy with the following commands  

```
$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) as500_v72_2.exe
$ init/dens=HD/index=begin dva0: fwupdate
$ mount dva0: fwupdate
$ create/dir dva0:[AS500]
$ copy/contiguous as500_v72_2.exe dva0:[AS500]fwupdate.exe
```
- b. **MCR Writeboot**  
Update VAX portion of boot block (default is Y): **No**  
Update Alpha portion of boot block (default is Y): **Yes**  
[enter AXP bootfile:] **dva0:[AS500]fwupdate.exe**
- c. Dismount the disk and shutdown VMS.  

```
$ dismount dva0:
```
- d. Insert the floppy on the target system and boot it from the >>>.  

```
>>> boot dva0
```

### Tru64 UNIX

- a. Go to the Digital Internet firmware site at  
<http://ftp.digital.com/pub/Digital/Alpha/firmware/>
  - b. Copy the firmware.exe file from the Alpha500 or Alpha600 directory to your System and rename it fwupdate.exe
  - c. Download the file mkbootfirm.tar from the firmware website.  
<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/mkbootfirm.tar>  
  
You can untar mkbootfirm on your target Tru64 UNIX system with the command:  

```
tar xvf mkbootfirm.tar
```
  - d. Make sure you have a floppy that has been low-level formatted.  
For example, to low-level format a floppy in drive 0:  

```
fddisk -fmt /dev/rfd0a
```
  - e. Change default to directory with mkbootfirm.exe  

```
cd mkbootfirm
```
  - f. Run mkbootfirm on the .exe firmware image that you downloaded. Mkbootfirm uses a .exe firmware image to create a file that can be dd'd to floppy. The following command will create a bootable floppy from a downloaded .exe firmware image:  

```
./mkbootfirm fwupdate.exe | dd of=/dev/rfd0c bs=64k
```
- NOTE:** Assumes mkbootfirm.exe is in current directory and floppy is in drive 0.
- g. Insert the floppy on the target system and boot it from the SRM console:  

```
>>> boot dva0
```

### Windows NT

- a. Copy the firmware file to a FAT formatted floppy with the update image filename of a:\fwupdate.exe.
- b. Shut down NT and from the NT Console menu, select "Install new firmware".

## Method 6 - BOOTP Network Upgrade - Tru64 UNIX

- a. Mount the Firmware Update CD using the following command:

```
mount -rt cdfs -o noversion /dev/rz4c /mnt
```

- b. Modify or Create the Client Database in the /etc/bootptab File  
<host>:ht:<hw\_type>:ha=<hw\_addr>:bf=<filename>:ip=<ip\_addr>

where:

**host** is the system name in /etc/hosts

**hw\_type** is the hardware type. Proteon is ht = 4.

Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.

**hw\_addr** is the hardware address: use the console command show device.

**filename** is the name of the default bootfile image:

**ip\_addr** is the Internet protocol address of the system name in /etc/hosts.

The following is an example of a bootptab file for the AlphaStation 500:

```
bigsox:ht=1:ha=08002b236423:bf=/mnt/ALPHA500/as500_v72_2.EXE;1:ip=16.182.0.87
```

- c. Modify the /etc/inetd.conf file. Uncommon the tftp and bootps process. It Should look like the following example:

```
tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt
bootps dgram upd wait root /usr/sbin/bootpd bootpd
```

- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**

```
ps aux | grep ine
```

```
kill process# <ine process number>
```

- e. Restart the inetd daemon:

```
/usr/sbin/inetd
```

### Note

The bootpd and tftp daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

**Use Man bootpd and man tftpd**

- f. Enter the following command to boot from the BOOTP server:

```
>>> boot -p bootp ewa0
```

Should a boot file "pathname" need to be specified in must be in quotes

```
>>> boot -p bootp ewa0 -file "/dir1/dir2/filename"
```

5. Update the firmware from the Apu-> prompt

```
Apu-> update
```

```
APU-I ARE YOU READY TO PROGRAM (SRM) ROM DEVICE ? (Y/N) y
```

```
APU-I PRECHARGING (SRM) ROM DEVICE
```

```
APU-I ERASING (SRM) ROM DEVICE
```

```
APU-I PROGRAMMING (SRM) ROM DEVICE
```

```
APU-I VERIFY LOADED (SRM) ROM IMAGE
```

```
APU-I VERIFY LOADED (SRM) ROM IMAGE DONE
```

```
APU-I PROGRAMMING (SRM) ROM COMPLETED
```

```
APU-I PRECHARGING (ARC /AlphaBIOS) ROM DEVICE
```

```
APU-I ERASING (ARC /AlphaBIOS) ROM DEVICE
```

```
APU-I PROGRAMMING (ARC /AlphaBIOS) ROM DEVICE
```

```
APU-I VERIFY LOADED (ARC /AlphaBIOS) ROM IMAGE
```

```
APU-I VERIFY LOADED (ARC /AlphaBIOS) ROM IMAGE DONE
```

```
APU-I PROGRAMMING (ARC /AlphaBIOS) ROM COMPLETED
```



6. Verify that update was successful and exit

```
Apu-> verify
SRM ROM verify successful
ARC /AlphaBIOS ROM verify successful
```

```
Apu-> exit
```

...Please Cycle System Power ...

7. Power cycle the machine to load console firmware. If you are updating device firmware, proceed to step 8.

8. Update the option firmware. The options supported for update in the V5.9 CD firmware version are the DEFPA (PCI FDDI), KZPSA (PCI SCSI) and DEFEA (EISA FDDI)

a. Boot the Option firmware file.

```
>>> boot -fl 0,a0 DKA400
Bootfile:as500_pci_v7_2.exe or as600_pci_v7_2.exe
```

This filename will change with each new firmware release.

```
*** PCI/EISA Loadable Firmware Update Utility V6.0 ***
```

```

Function Description

```

```
Display Displays the system's configuration table.
Exit Done exit LFU (reset.)
List Lists the device, revision, firmware name,
 and update revision.
Update Replaces current firmware with loadable data
 image.
Verify Compares loadable and hardware images.
? or Help Scrolls this function table.

```

```
UPD> list
Current Revision Filename Update Revision
fwa0 dfxaa_fw 3.20
pka0 kzpsa_fw A12
```

```
UPD> update * or update
Will update all LFU supported devices found in this system
```

```
UPD> update pka0 - will update device PKA0
Confirm update on:
pka0
[Y/(N)]Y
```

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

```
pka0 Updating to A12... Verifying A12... PASSED.
```

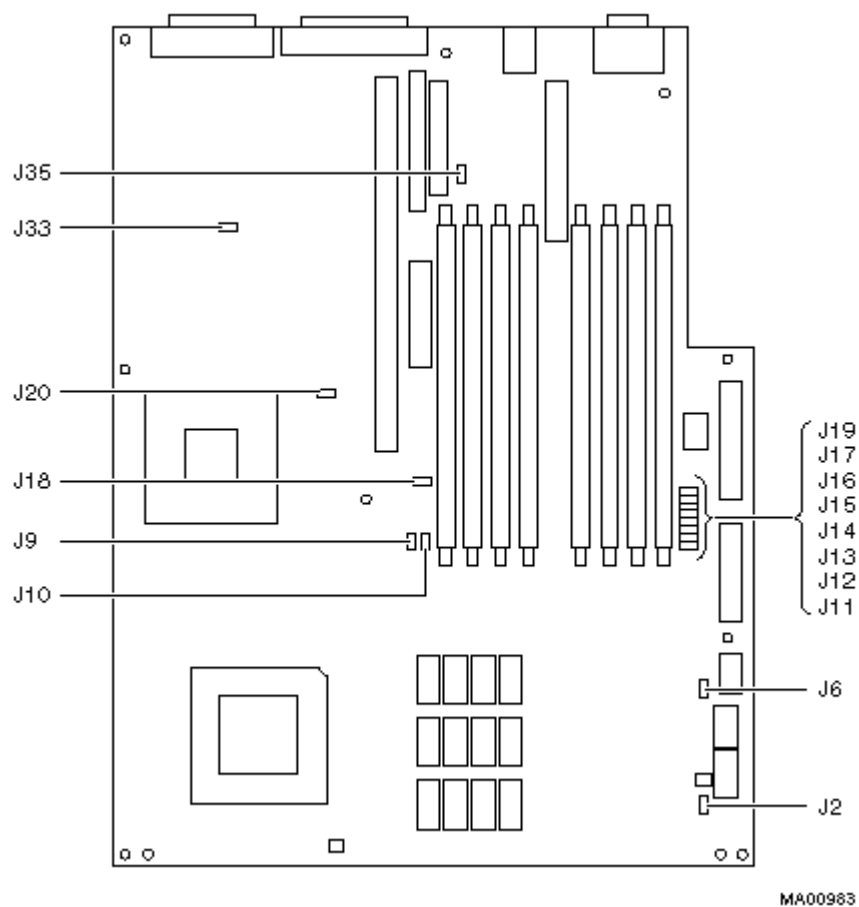
```
UPD> update fwa0 -path mopdl:new_firm/eza0
Will update the device named fwa0 with firmware NEW_FIRM from the network.
```

```
UPD> verify
fwa0 Verifying 3.20... PASSED.
pka0 Verifying A12... PASSED.
```

9. Power cycle the machine to load console firmware then reset any environmental variables that changed, init and reboot.

## AlphaStation 500 Jumper Locations

### System Module



| System Module SROM Jumpers |          |                                 |
|----------------------------|----------|---------------------------------|
| Jumper                     | Position | Function                        |
| J11                        | 0        | Power Up (default) *            |
| J12                        | 1        | Mini Console                    |
| J13                        | 2        | Floppy loader (Failsafe Loader) |
| J14                        | 3        | MFG Memtest                     |
| J15                        | 4        | Reserved                        |
| J16                        | 5        | Reserved                        |
| J17                        | 6        | MCHK Mini-Console               |
| J19                        | 7        | Noinit Mini-Console             |

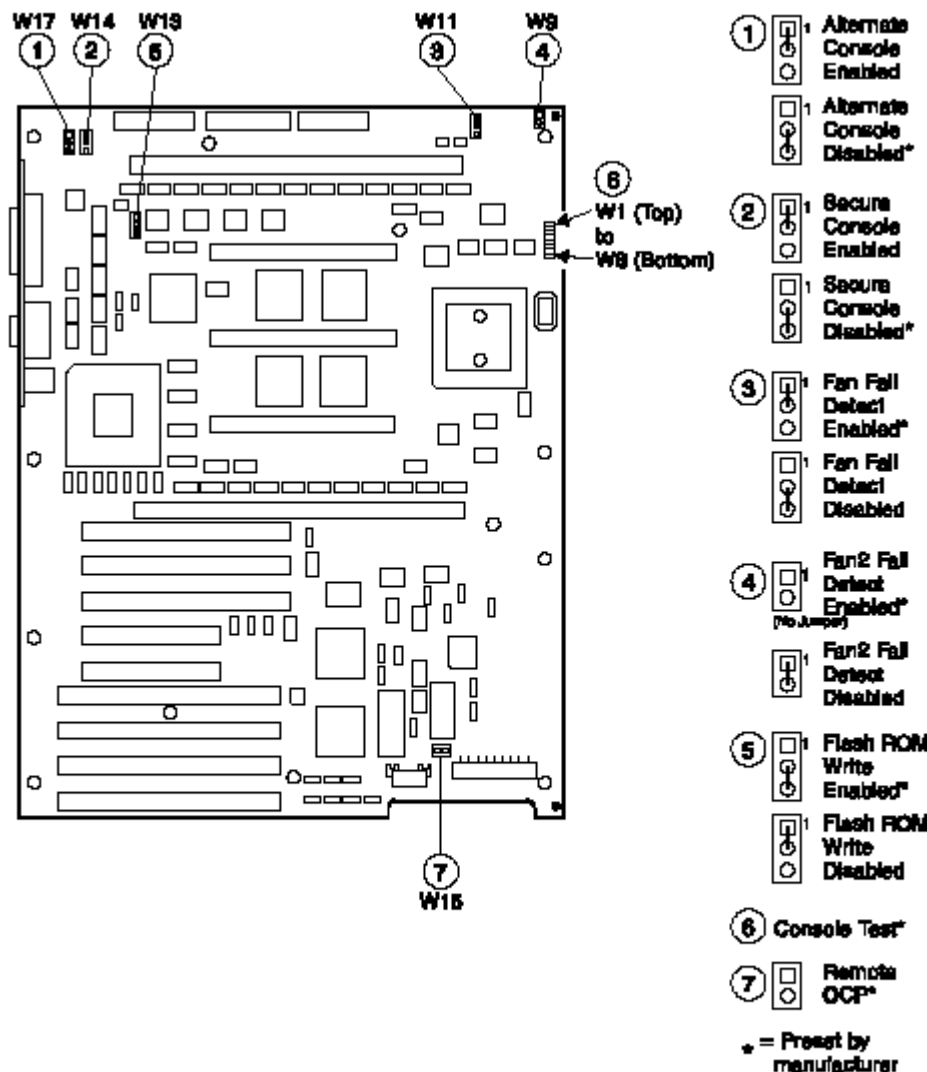
\* Only one jumper can be used at a time.

| System Board Jumpers |                                |                           |                           |
|----------------------|--------------------------------|---------------------------|---------------------------|
| Jumper               | Function                       | Pins 1 to 2               | Pin 2 to 3                |
| J6                   | Front panel button function    | Reset *                   | Halt                      |
| J9                   | Secure console                 | Enabled                   | Disabled *                |
| J10                  | Alternate console              | Alternate console enabled | Primary console enabled * |
| J18                  | Controls 12 volts for the FROM | FROM write protect        | FROM Write enabled *      |
| J2, J20,<br>J33, J35 | Ground reference jumpers       |                           |                           |

(\*) = Default position

AlphaStation 600 Jumper Locations

System Module



| System Board Jumpers W1-W8                                                                                           |                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Jumper                                                                                                               | Function                                                                                                                        |
| W1                                                                                                                   | Normal power-up flow, SROM will default to floppy boot if Flash ROM is not loaded.                                              |
| W2                                                                                                                   | Mini-console with initialized system interface                                                                                  |
| W3                                                                                                                   | Floppy Boot - Fail-safe loader                                                                                                  |
| W4                                                                                                                   | Memory Test                                                                                                                     |
| W5                                                                                                                   | Normal power-up flow with only set 1 of Scache enabled                                                                          |
| W6                                                                                                                   | Normal power-up flow with only set 2 of Scache enabled                                                                          |
| W7                                                                                                                   | Normal power-up flow with only set 3 of Scache enabled                                                                          |
| W8                                                                                                                   | Non-initialized mini-console with un-initialized system interface (requires user to type uppercase U before any output is seen) |
| Jumper W1-W8 are used to select boot or test code stored in the SROM.<br>Only one jumper can be installed at a time. |                                                                                                                                 |

| System Board Jumpers |                                         |                  |                  |
|----------------------|-----------------------------------------|------------------|------------------|
| Jumper               | Function                                | Pins 1 to 2      | Park on 2        |
| W9                   | Fan2 fail detect (no jumper* to enable) | Disabled         | N/A              |
| W11                  | Fan fail detect                         | Enabled*         | Disabled         |
| W13                  | FlashROM Write                          | Disabled         | Enabled*         |
| W14                  | Secure console                          | Enabled          | Disabled*        |
| W15                  | Remote OCP                              | N/A factory only | N/A factory only |
| W17                  | Alternate console                       | Enabled          | Disabled*        |

(\*) = Default Position

## AlphaStation 600A

The AlphaStation 600A systems contain flash roms on the System module. They contain ARC console firmware for Windows NT and SRM console firmware for Tru64 UNIX and OpenVMS. The ability to write to these roms is controlled on the AlphaStation 600A by jumper J50 on the system module. When ever the system module is replaced the firmware will need to be updated. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off of an infoservert using the Alpha AXP System Firmware Update Utility CD.
- Over the network using the .SYS firmware file.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- Off of a bootable floppy OpenVMS, Unix or NT.
- From the BOOTP server (Unix).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision by the power on display, SHOW commands or from online SDA with a CLUE CONFIG command.
  - Record all console environmental variables by typing SHOW \* at the >>>.
  - Determine which method and firmware version will be used to do the update.
  - Print the firmware release notes for that version and system.
  - Determine if any option firmware will be upgraded.
  - Verify the ROM Update Jumpers are in the correct positions.
  - Boot the firmware file (LFU).
  - Use the verify and update commands at the UPD> prompt.
  - When done exit from LFU.
  - Power off/on the machine to reload the new firmware.
  - Reset any Environmental variables that were changed and reboot.
  - Run ECU, RCU or any configuration programs as required.
1. Get the current firmware revision at power on or with console show commands.

Power on display

eb....ea.e9.e8.e7.e6.

Digital AlphaStation 600A Console V4.8-79 built on Nov 6 1996 at 14:48:02

>>> **show version**

Version X6.3-11 Nov 6 1996 14:48:02

>>> **show pal**

PAL VMS PALcode X1.18-0, OSF PALcode X1.21-0

>>> **show config**

Firmware

SRM Console: T4.7

ARC Console: 5.23

PALcode: VMS PALcode X1.19-3, OSF PALcode V2.21-5

Serial ROM: T1.1

Processor

DECchip (tm) 21164A 500Mhz

4 MB Cache

## Memory

```
64 Meg of System Memory
Bank 0 = 64 Mbytes(16 MB Per Simm) Starting at 0x00000000
Bank 1 = No Memory Detected
Bank 2 = No Memory Detected
Bank 3
Slot Option Hose 0, Bus 0, PCI
 5 Qlogic ISP1020 pka0.7.0.5.0 SCSI Bus ID 7
 dka0.0.0.5.0 RZ28
 dka400.4.0.5.0 RRD43
 6 S3 Trio64/Trio32
 7 Intel 82375eB Bridge to Bus 1, EISA
11 DECchip 20150-AA ewb0.0.0.11.0 08-00-2B-E5-CC-B1

Slot Option Hose 0, Bus 1, EISA
 1 ISA2000

Slot Option Hose 0, Bus 2, PCI
 2 Qlogic ISP1020 pkb0.7.0.2002.0 SCSI Bus ID 7
 3 Qlogic ISP1020 pkc0.7.0.2003.0 SCSI Bus ID 7
 dkc0.0.0.2003.0 RZ25

Slot Option Hose 0, Bus 3, PCI
 0 DECchip 20140-AA ewa0.0.3000.0 08-00-2B-E2-31-68
```

2. >>> **show** or **show \*** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.  
    **Bootdef dev**  
    **Boot\_osflags**  
    **Auto\_action**
3. Check that the ROM update jumper is enabled. Consult the Service Manual for its location and setting. It should be enabled by default.
4. Boot the firmware using one of the following methods.

### Method 1 - Boot the Console CD Off a Local CDROM

#### **SRM Console**

- a. Insert the CD in the local CDROM
- b. >>> **Boot -fl 0,a0 DKA400**  
    BOOTFILE: **[alpha600A]as600a\_e5\_v5\_7.exe**  
  
    **Note:** These filenames will change with different console versions  
  
    Apu-> See below for update steps

#### **ARC Console**

- a. Insert the CD in the local CDROM.
- b. Enter the ARC menu by typing **ARC** or initializing system if os\_type = NT
- c. Select " **Supplementary Menu and Install new Firmware**

### Method 2 - Boot the Console CD Off of an Infoserwer

- a. Insert CD in the Infoserwer
- b. >>> **boot ewa0 -file filename** (leave off the .sys extension)

### Method 3 - Booting Off the Network - OpenVMS

- a. Copy the firmware.sys file and the option firmware files to MOM\$LOAD of an existing node in the cluster. (These versions are from the V5.9 CD and may change)

as600a\_e5\_v5\_6.exe - This is the system firmware  
asl000fw.sys - This file tells update utility which option files to load.  
dfeaal30.sys - DEFEA firmware (EISA DEC FDDI controller. Pass 1 module only)  
dfeab320.sys - DEFEA firmware (EISA FDDI controller. All modules after pass 1)  
dfxaa320.sys - DEFEA/DEFEA firmware (PCI and EISA based DEC FDDI controller)  
kzpsaal2.sys - KZPSA firmware (Fast wide differential PCI-SCSI module)

- b. Set the attributes on the file with the following commands:  
\$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.sys

- c. Enable service on that node from NCP

```
$ MC NCP
MC NCP> Show Known Circuit Characteristic
Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

Circuit = BNA-0 - Circuit name will change from system to system
State = on
Service = disabled (if enabled skip to boot command)
Counter timer = 65534
Designated router = 28.1023 (CX028A)
Cost = 4
Maximum routers allowed = 33
Router priority = 64
Hello timer = 15
Type = Ethernet
Adjacent node = 28.1023 (CX028A)
Listen timer = 30

NCP> Set Circ BNA-0 State OFF - This step will stop network activity
NCP> Set Circ BNA-0 Service Enable
NCP> Set Circ BNA-0 State ON
```

- d. >>> boot ewa0 -fi filename (Leave off .SYS or will get error- BAD MOP FID)

### Method 4 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

#### **Non-System Disk**

- a. Locate the firmware.exe file
- b. Set the attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:  
\$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.exe  
\$ copy/contiguous firmware.exe "non\_system\_disk":[directory]
- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

#### **\$ MCR Writeboot**

Update VAX portion of boot block (default is Y): **No**  
Update Alpha portion of boot block (default is Y): **Yes**  
Target system device (and bootfile if not VMB.EXE): **\$1\$dua5:[TEM]as600a\_e5\_v5\_6.exe**

- d. >>> boot -f1 0,0 dua5

**Note:** Updating options via this method is only supported if the system disk is on the NCR810 SCSI bus (the on-board SCSI).



- e. To update the option firmware, first create an option directory.  

```
$ set def dua0:[000000]
$ create/dir [.options]
```
- f. Copy the option firmware files to the options directory.  

```
as1000fw.txt
dfeaa130.sys
dfeab320.sys
dfxaa320.sys
kzpsaal2.sys
```
- g. When booting the update utility enter the device name where the option firmware is located.

#### System Disk

- a. Only steps a and b above are used. Do NOT execute writeboot step c.
- b. Specify the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for the bootfile.  

```
>>> b -fl 0,a0 dua0
bootfile: dua0:[sys0.sysexec]as600a_e5_v5_6.exe
```

#### Method 5 - Boot Off of a bootable floppy

##### OpenVMS AXP

- a. Init and mount to floppy. Create a directory and copy the firmware to the floppy with the following commands  

```
$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) as600a_e5_v5_6.exe
$ init/dens=HD/index=begin dva0: fwupdate
$ mount dva0: fwupdate
$ create/dir dva0:[AS500]
$ copy/contiguous as600a_e5_v5_6.exe dva0:[AS600a]fwupdate.exe
```
- b. **MCR Writeboot**  
Update VAX portion of boot block (default is Y): **No**  
Update Alpha portion of boot block (default is Y): **Yes**  
[enter AXP bootfile:] **dva0:[AS600a]fwupdate.exe**
- c. Dismount the disk and shutdown VMS.  

```
$ dismount dva0:
```
- d. Insert the floppy on the target system and boot it from the >>>.  

```
>>> boot dva0
```
- e. If you wish to update option firmware you must create a second floppy with option firmware on it. Download the following files from the Website.  

```
as1000fw.txt
dfeaa130.sys
dfeab320.sys
dfxaa320.sys
kzpsaal2.sys
```
- f. Enter the following commands to create the options floppy:  

```
$ init/dens=HD/index=begin dva0: optionfw
$ mount dva0: optionfw
$ create/dir dva0:[options] - Note:The directory name must be [options]
$ copy as1000fw.txt dva0:[options]
$ copy dfeaa130.sys dva0:[options]
$ copy dfeab320.sys dva0:[options]
$ copy dfxaa320.sys dva0:[options]
$ copy kzpsaal2.sys dva0:[options]
$ dismount dva0:
```
- g. Insert floppy when it asks for an options firmware and enter the location.

## Tru64 UNIX

- a. Go to the Digital Internet firmware site at  
<http://ftp.digital.com/pub/Digital/Alpha/firmware/>
- b. Copy the firmware.exe file from the Alpha600A directory to your system and rename it fwupdate.exe
- c. Download the file mkbootfirm.tar from the firmware website.  
<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/mkbootfirm.tar>  
  
You can untar mkbootfirm on your target Tru64 UNIX system with the command:  
**# tar xvf mkbootfirm.tar**
- d. Make sure you have a floppy that has been low-level formatted.  
For example, to low-level format a floppy in drive 0:  
**fddisk -fmt /dev/rfd0a**
- e. Change default to directory with mkbootfirm.exe  
**cd mkbootfirm**
- f. Run mkbootfirm on the .exe firmware image that you downloaded. Mkbootfirm uses a .exe firmware image to create a file that can be dd'd to floppy. The following command will create a bootable floppy from a downloaded .exe firmware image:  
**./mkbootfirm fwupdate.exe | dd of=/dev/rfd0c bs=64k**  
  
**NOTE:** Assumes mkbootfirm.exe is in current directory and floppy is in drive 0.
- g. Insert the floppy on the target system and boot it from the SRM console:  
**>>> boot dva0**
- h. If you wish to update option firmware you must create a second floppy with option firmware on it. Go to the firmware website and follow this procedure.
- i. Download the file v39\_options.dd. This file name changes with different console versions.
- j. Make sure you have a floppy that has been low-level formatted.  
For example, to low-level format a floppy in drive 0:  
**fddisk -fmt /dev/rfd0a**
- k. Enter the command:  
**dd if=v39\_options.dd of=/dev/rfd0c bs=64k**  
  
**NOTE:** This assumes the v39\_options.dd image file is in the current directory and that the floppy is in drive 0.
- l. After booting the firmware floppy created with mkbootfirm, the update utility will complain that it cannot find the options files on either CD or floppy, and will prompt for a device to look for the options files. Simply insert the options floppy you created above, type the device name of the floppy (e.g. dva0) and hit <return> to load the options firmware.

## Windows NT

- a. Copy the firmware file to a FAT formatted floppy with the update image filename of a:\fwupdate.exe.
- b. Shut down NT and from the NT Console menu, select "Install new firmware".

- c. If you wish to update the options firmware, you must create a second floppy. Download the following files from the options directory at the firmware website.  
`as1000fw.txt`  
`dfeaa130.sys`  
`dfeab320.sys`  
`dfxaa320.sys`  
`kzpsaal2.sys`
- d. FAT format a floppy and copy the files to the floppy.
- e. When the utility asks for the options floppy, insert it and tell the utility the device it is located on.

#### **Method 6 - BOOTP Network Upgrade - Tru64 UNIX**

- a. Mount the Firmware Update CD using the following command:  
`# mount -rt cdfs -o noversion /dev/rz4c /mnt`
- b. Modify or Create the Client Database in the /etc/bootptab File  
`<host>:ht:<hw_type>:ha=<hw_addr>:bf=<filename>:ip=<ip_addr>`

where:

**host** is the system name in /etc/hosts

**hw\_type** is the hardware type. Proteon is ht = 4.

Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.

**hw\_addr** is the hardware address: use the console command show device.

**filename** is the name of the default bootfile image:

**ip\_addr** is the Internet protocol address of the system name in /etc/hosts.

The following is an example of a bootptab file for the AlphaStation 600a:

bigsox:ht=1:ha=08002b236423:bf=/mnt/ALPHA600a/as600a\_e5\_v5\_6.EXE;1:ip=16.182.0.87

- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:  
`tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt`  
`bootps dgram udp wait root /usr/sbin/bootpd bootpd`
- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**  
`# ps aux | grep ine`  
`# kill process# <ine process number>`
- e. Restart the inetd daemon:  
`# /usr/sbin/inetd`

#### **Note**

The bootpd and tftp daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

**Use Man bootpd and man tftpd**

- f. Enter the following command to boot from the BOOTP server:  
`>>> boot -p bootp ewa0`

Should a boot file "pathname" need to be specified in must be in quotes

`>>> boot -p bootp ewa0 -file "/dir1/dir2/filename"`

- g. Currently there is no BOOTP support for updating option firmware.

5. From the UPD> prompt save contents of NVRAM to floppy using **SAVE\_NVRAM**.

6. Execute list at the UPD prompt to check current versions.

```
UPD> list
Device Current Revision Filename Update Revision
ARC 5.64 arc_fw 5.70
SRM v5.2-115 srm_fw v5.6-114
 dfxaa_fw 3.20
 dfeaa_fw 1.3
 dfeab_fw 3.20
 kzpsa_fw A12
```

7. Update the firmware from the UPD> prompt

```
UPD> update
Confirm update on:
ARC
SRM
[Y/(N)]y
WARNING: updates may take several minutes to complete for each device.
```

DO NOT ABORT!

```
ARC Updating to v5.70... Verifying v5.70... PASSED.
SRM Updating to v5.6-114... Verifying v5.6-114... PASSED.
```

or

```
UPD> update pka0 - will update device PKA0
Confirm update on:
pka0
[Y/(N)]Y
```

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

```
pka0 Updating to A12... Verifying A12... PASSED.
```

8. Verify that update was successful and exit

```
UPD> verify
ARC Verifying v5.70... PASSED.
SRM Verifying v5.6-114... PASSED.
fwa0 Verifying 3.20... PASSED.
pka0 Verifying A12... PASSED.
```

```
UPD> exit
Initializing...
```

9. Power cycle the machine to load console firmware. Reboot firmware CD and execute a **RESTORE\_NVRAM** if you saved them in step 5.

10. Power cycle the machine to load console firmware then reset any environmental variables that changed, init and reboot.

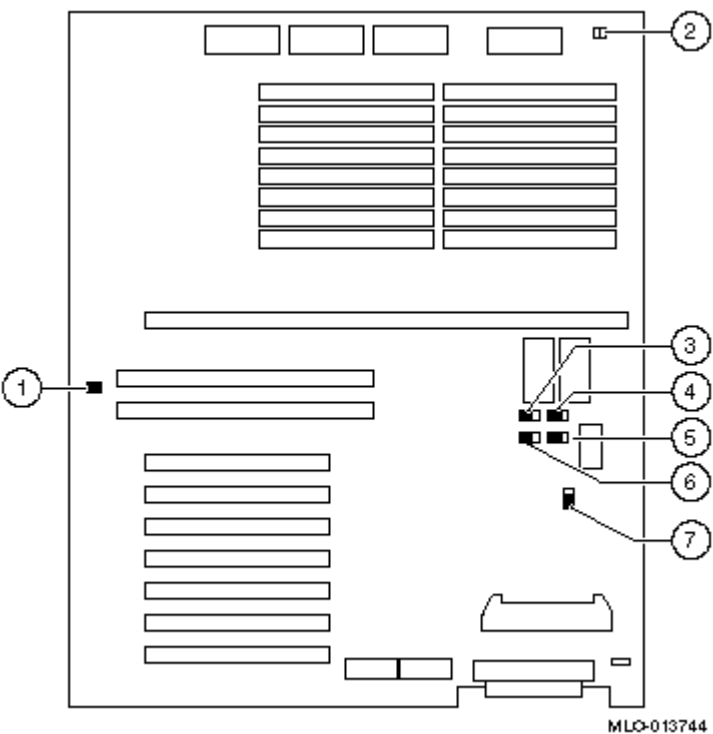
11. If ECU or RCU you need to run them from the AlphaBIOS menu.

- a. Select the Utilities Menu.
- b. Select **Run ECU from floppy...** to run ECU.
- c. Select **Run Maintenance Program...** to run RCU.



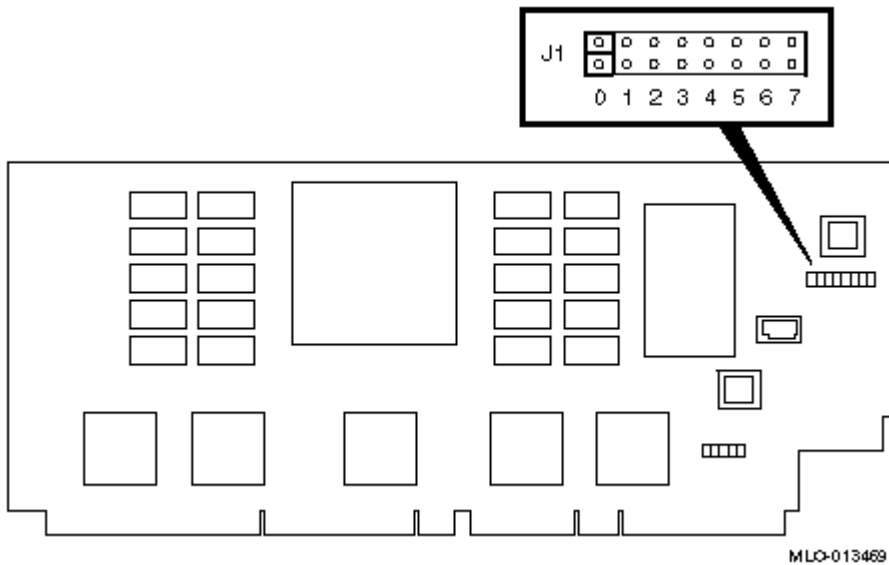
AlphaStation 600A Jumpers

System Board



| System Module Jumpers and Locations |        |                                                            |                                                                                                                                                                         |          |
|-------------------------------------|--------|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Item                                | Jumper | Name                                                       | Description                                                                                                                                                             | Default  |
| 1                                   | J50    | FROM VPP enable                                            | Permits the 12 volts needed to update the Flash ROMs                                                                                                                    | Enabled. |
| 2                                   | J16    | Fan                                                        | Allows the large fan to be disabled.                                                                                                                                    | Enabled. |
| 3                                   | J53    | Fan shutdown                                               | Allows the software to shut down the system in the event of a fan failure.                                                                                              | Enabled. |
| 4                                   | J52    | Temperature shutdown                                       | Allows the temperature chips to shut down the system in an orderly sequence.                                                                                            | Enabled. |
| 5                                   | J56    | Fan fault                                                  | Allows hardware to detect a fan fault and shut down the system in an orderly sequence. Set to disable if testing the system board or CPU card outside of the enclosure. | Enabled. |
| 6                                   | J51    | SCSI terminator                                            | Enables the on-board SCSI terminators. The system specification requires that the SCSI bus be terminated at both ends.                                                  | Enabled. |
| 7                                   | J25    | Note: This jumper J25 is not used in the AlphaStation 600A |                                                                                                                                                                         |          |

Cpu Module



| CPU J1 Jumper                                                                                                                      |                                                             |
|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Bank                                                                                                                               | Jumper Setting Function                                     |
| 0                                                                                                                                  | Standard boot setting                                       |
| 1                                                                                                                                  | Standard boot setting                                       |
| 2                                                                                                                                  | Mini console setting (Internal use only)                    |
| 3                                                                                                                                  | Mini console setting (Internal use only)                    |
| 4                                                                                                                                  | Startup with no backup cache (Internal use only)            |
| 5                                                                                                                                  | Mini console setting (Internal use only)                    |
| 6                                                                                                                                  | Mini console setting (Internal use only)                    |
| 7                                                                                                                                  | Fail-safe loader setting: selects fail-safe loader firmware |
| <b>Note</b> The J1 jumper on the CPU card activates the SROM tests and the fail-safe loader. It is shown with its default setting. |                                                             |

## Digital Personal WorkStation a/au Series

The Digital Personal WorkStation a/au Systems contain a single 1MB flash Rom located on the motherboard. It contains ARC console firmware for Windows NT and SRM console firmware for Tru64 UNIX and OpenVMS. When ever the CPU motherboard is replaced the firmware will need to be updated. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off of an infoservert using the Alpha AXP System Firmware Update Utility CD.
- Over the network using the .SYS firmware file.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- Off of a bootable floppy OpenVMS, Unix or NT.
- From the BOOTP server (Unix).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision by the power on display, SHOW commands or from online SDA with a CLUE CONFIG command.
- Record all console environmental variables by typing SHOW \* at the >>>.
- Determine method and firmware version you will be using to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Boot the firmware file (LFU).
- Use the verify and update commands at the Apu-> prompt.
- When done exit from LFU.
- Reset any Environmental variables that were changed and reboot.

1. Get the current firmware revision at power on or with console show commands.

Power on or init display

```
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.CPU 0 speed is 2.31 ns (433MHz)
ef.ee.ed.ec.eb.f4.ea.e9.e8.e7.e6.e5.e4.
Digital Personal WorkStation 433au Console V6.8-41
built on May 21 1998 at 16:03:04
```

```
>>> sho version
```

```
version V6.8-41 May 21 1998 16:03:04
```

```
>>> sho pal
```

```
pal VMS PALcode V1.20-14, OSF PALcode V1.22-17
```

```
>>>sho config
```

Firmware

SRM Console: V6.8-41

ARC Console: 5.65

PALcode: VMS PALcode V1.20-14, OSF PALcode V1.22-17

SRM Version: v5.90

Processor

DECchip (tm) 21164A-2 Pass 433 MHz 96 Kbytes Scache

2 MB Bcache

PYXIS ASIC Pass 257



## MEMORY

Memory Size = 192Mb

| Bank | Size/Sets | Base Addr |
|------|-----------|-----------|
| 0    | 64Mb      | 08000000  |
| 1    | 128Mb     | 00000000  |

Bcache Size = 2Mb

Tested Memory = 192Mbytes

### PCI Bus

Bus 00 Slot 03: Digital Semiconductor 21143 Network Controller  
ewa0.0.0.3.0 00-00-F8-75-5F-2A

Bus 00 Slot 04: PCI IDE  
pqa0.0.0.4.0 PCI EIDE  
dka0.0.0.4.0 TOSHIBA CD-ROM XM-57

Bus 00 Slot 07: Intel SIO 82378

Bus 00 Slot 12: Digital TGA2 Graphics Controller

Bus 00 Slot 20: DECchip 21052 PCI to PCI Bridge  
Bus 01 Slot 08: DECchip 21041 Network Controller  
ewb0.0.0.1008.0 00-00-F8-06-5E-BF

Bus 01 Slot 09: ISP1040 Scsi Controller  
pkc0.7.0.1009.0 SCSI Bus ID 7  
dkc0.0.0.1009.0 RZ1BB-BS  
mkc600.6.0.1009.0 TLZ07

| ISA Slot | Device | Name   | Type     | Enabled | BaseAddr | IRQ | DMA |
|----------|--------|--------|----------|---------|----------|-----|-----|
| 0        | 0      | MOUSE  | Embedded | Yes     | 60       | 12  |     |
|          | 1      | KBD    | Embedded | Yes     | 60       | 1   |     |
|          | 2      | COM1   | Embedded | Yes     | 3f8      | 4   |     |
|          | 3      | COM2   | Embedded | Yes     | 2f8      | 3   |     |
|          | 4      | LPT1   | Embedded | Yes     | 3bc      | 7   |     |
|          | 5      | FLOPPY | Embedded | Yes     | 3f0      | 6   | 2   |
|          | 6      | EIDE   | Embedded | Yes     | 1f0      | 14  |     |
|          |        |        |          |         | 3f6      | 15  |     |
|          |        |        |          |         | 170      |     |     |
|          |        |        |          |         | 376      |     |     |
| 7        | ES1888 |        | Embedded | Yes     | 220      | 5   | 1   |

2. >>> **show** or **show \*** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.

**Bootdef\_dev**  
**Boot\_osflags**  
**Auto\_action**

3. Boot the firmware using one of the following six methods.

## Method 1 - Load the Console Firmware Off a Local CDROM

### SRM Console

- a. Insert the CD in the local CDROM.
- b. >>> **Boot -fl 0,a0 DKA400**  
BOOTFILE:[digitalpw]digitalpw\_v72\_1.exe

**Note:** These filenames will change with different console versions.

Apu-> See step 5 below for update procedure.

### ARC Console

- a. Insert the CD in the local CDROM.
- b. Enter the ARC menu by typing **ARC** or initializing system if os\_type = NT
- c. Select **Supplementary Menu** and **Install new Firmware**

#### Caution

If you are running the V4.49 ARC console you will not be able to use the "Install new Firmware" utility. The SRM firmware will need to be updated from the >>>.

## Method 2 - Boot the Console CD Off of an Infoserver

- a. Insert CD in the Infoserver
- b. >>> **boot ewa0 -file filename** (leave off the .sys extension)

## Method 3 - Booting off the Network - OpenVMS

- a. Copy firmware.sys file to MOM\$LOAD of an existing node in the cluster
- b. Set the attributes on the file with the following commands:  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.sys**
- c. Enable service on that node from NCP  
\$ **MC NCP**  
MC NCP> **Show Known Circuit Characteristic**  
Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41  
  
Circuit = BNA-0 - **Circuit name will change from system to system**  
State = on  
Service = disabled (if enabled skip to boot command)  
Counter timer = 65534  
Designated router = 28.1023 (CX028A)  
Cost = 4  
Maximum routers allowed = 33  
Router priority = 64  
Hello timer = 15  
Type = Ethernet  
Adjacent node = 28.1023 (CX028A)  
Listen timer = 30  
  
NCP> **Set Circ BNA-0 State OFF** - This step will stop network activity  
NCP> **Set Circ BNA-0 Service Enable**  
NCP> **Set Circ BNA-0 State ON**
- d. >>> **b ewa0 -fi filename**  
Leave off .SYS or node that services request will get an error - **BAD MOP FID**)

#### Method 4 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

##### **Non-System Disk**

- a. Locate the firmware.exe file
- b. Set the attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:  
\$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.exe  
\$ copy/contiguous firmware.exe "non\_system\_disk":[directory]
- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

##### **\$ MCR Writeboot**

Update VAX portion of boot block (default is Y): **No**

Update Alpha portion of boot block (default is Y): **Yes**

Target system device (and boot file if not VMB.EXE):

\$1\$DUA5:[digitalpw]digitalpw\_v72\_1.exe

- d. >>> **b -fl 0,0 dua5**

##### **System Disk**

- a. Only steps a and b above are used. Do NOT execute writeboot step c.
- b. Specify the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for bootfile.

>>> **boot -fl 0,a0 dua0**

bootfile: **dua0:[sys0.sysexec]digitalpw\_v72\_1.exe**

#### Method 5 - Boot Off of a Bootable Floppy

##### **OpenVMS AXP**

- a. Init and mount floppy. Create a directory and copy the firmware to the floppy with the following commands.  
\$ init/dens=HD/index=begin dva0: fwupdate  
\$ mount dva0: fwupdate  
\$ create/dir dva0:[digitalpw]  
\$ copy/contiguous digitalpw\_v72\_1.exe dva0:[digitalpw]fwupdate.exe
- b. **MCR Writeboot**  
Update VAX portion of boot block (default is Y): **No**  
Update Alpha portion of boot block (default is Y): **Yes**  
[enter AXP bootfile:] **dva0:[digitalpw]fwupdate.exe**
- c. Dismount the disk and shutdown VMS.  
\$ **dismount dva0:**
- d. Insert the floppy on the target system and boot it from the >>>.  
>>> **boot dva0**

##### **Tru64 UNIX**

- a. Go to <http://ftp.digital.com/pub/Digital/Alpha/firmware/>
- b. Copy the firmware.exe file from the Alpha300 directory to your system and rename fwupdate.exe
- c. Download the file mkbootfirm.tar from the firmware website.  
<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/mkbootfirm.tar>

You can untar mkbootfirm on your target Tru64 UNIX system with the command:

**# tar xvf mkbootfirm.tar**

- d. Make sure you have a floppy that has been low-level formatted.  
For example, to low-level format a floppy in drive 0:

```
fddisk -fmt /dev/rfd0a
```

- e. Change default to directory with mkbootfirm.exe  
**cd mkbootfirm**
- f. Run mkbootfirm on the .exe firmware image that you downloaded. mkbootfirm uses a .exe firmware image to create a file that can be dd'd to floppy. The following will create a bootable floppy from a downloaded .exe firmware image:

```
./mkbootfirm fwupdate.exe | dd of=/dev/rfd0c bs=64k
```

**NOTE:** Assumes mkbootfirm.exe is in current directory and floppy is in drive 0.

- g. Insert the floppy on the target system and boot it from the SRM console:  
**>>> boot dva0**

#### Windows NT

- a. Copy the firmware file to a FAT formatted floppy with the update image filename a:\fwupdate.exe.
- b. Shut down NT and from the ARC menu, select "Install new firmware".

#### Caution

If you are running the V4.49 ARC console you will not be able to use the "Install new Firmware" utility. The SRM firmware will need to be updated from the >>>.

#### Method 6 - BOOTP Network Upgrade - Tru64 UNIX

- a. Mount the Firmware Update CD using the following command:  
**# mount -rt cdfs -o noversion /dev/rz4c /mnt**
- b. Modify or Create the Client Database in the /etc/bootptab File  
**<host>:ht:<hw\_type>:ha=<hw\_addr>:bf=<filename>:ip=<ip\_addr>**

where:

**host** is the system name in /etc/hosts

**hw\_type** is the hardware type. Proteon is ht = 4.

Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.

**hw\_addr** is the hardware address: use the console command show device.

**filename** is the name of the default bootfile image:

**ip\_addr** is the Internet protocol address of the system name in /etc/hosts.

The following is an example of a bootptab file for the Digital Personal WorkStation

```
bigsox:ht=1:ha=08002b236423:bf=/mnt/digitalpw/digitalpw_v72_1.exe:ip=16.182.0.87
```

- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:

```
tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt
bootps dgram upd wait root /usr/sbin/bootpd bootpd
```

- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**  
**# ps aux | grep ine**  
**# kill process# <ine process number>**

e. Restart the inetd daemon:

```
/usr/sbin/inetd
```

**Note**

The bootpd and tftp daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

**Use Man bootpd and man tftpd**

f. Enter the following command to boot from the BOOTP server:

```
>>> boot -p bootp ewa0
```

Should a boot file "pathname" need to be specified in must be in quotes

```
>>> boot -p bootp ewa0 -file "/dir1/dir2/filename"
```

5. Enter the update utility. The SHOW command will indicate current firmware version. Then execute the Update command.

```
*** Digital Personal WorkStation 433au -- Firmware Update ***
```

```
Use HELP or ? for help
```

```
Update
Verify
List
Show
Debug
Ndebug
?
```

a. Apu-> **show**

```
*** ROM: SRM
Firmware = MIATA_SRM
Version = v6.9
*** ROM: ARC /AlphaBIOS
Firmware = MIATA_ARC
Version = 5.67
```

b. Apu-> **update**

```
APU-I ARE YOU READY TO PROGRAM (SRM) ROM DEVICE ? (Y/N) y
APU-I ERASING (SRM) ROM DEVICE
APU-I PROGRAMMING (SRM) ROM DEVICE
APU-I VERIFY LOADED (SRM) ROM IMAGE
APU-I VERIFY LOADED (SRM) ROM IMAGE DONE
APU-I PROGRAMMING (SRM) ROM COMPLETED
APU-I ERASING (ARC /AlphaBIOS) ROM DEVICE
APU-I PROGRAMMING (ARC /AlphaBIOS) ROM DEVICE
APU-I VERIFY LOADED (ARC /AlphaBIOS) ROM IMAGE
APU-I VERIFY LOADED (ARC /AlphaBIOS) ROM IMAGE DONE
APU-I PROGRAMMING (ARC /AlphaBIOS) ROM COMPLETED
APU-I ERASING (SROM) ROM DEVICE
APU-I PROGRAMMING (SROM) ROM DEVICE
APU-I VERIFY LOADED (SROM) ROM IMAGE
APU-I VERIFY LOADED (SROM) ROM IMAGE DONE
APU-I PROGRAMMING (SROM) ROM COMPLETED
```

c. If your SROM is not at least Revision 4.45 then you must execute two update commands when using the flash update utility. **Update** and **Update SROM**. See example below.

To see current version set to **DEBUG** mode and do a **SHOW VERSION** or **SHOW CONFIG** (see example above).

```
Apu-> debug
Debug :Apu->
```

```

Debug :Apu-> verify
Version = v7.2
Vendor = DEC
Product = MIATA
Firmware = MIATA_SRM
Length = 0x72200
1024KB ROM present
Version = v7.2
Vendor = DEC
Product = MIATA
Firmware = MIATA_SRM
Length = 0x72200
Version = v7.2
Vendor = DEC
Product = MIATA
Firmware = MIATA_SRM
Length = 0x72200
SRM ROM verify successful
Version = 5.70
Vendor = DEC
Product = MIATA
Firmware = MIATA_ARC
Length = 0x677ac
Version = 5.70
Vendor = DEC
Product = MIATA
Firmware = MIATA_ARC
Length = 0x677ac
ARC /AlphaBIOS ROM verify successful
Version = v5.90
Vendor = DEC
Product = MIATA
Firmware = MIATA_SROM
Length = 0x3fff
Version = v5.90 ← SROM Version
Vendor = DEC
Product = MIATA
Firmware = MIATA_SROM
Length = 0x3fff
SROM ROM verify successful
Debug :Apu->

```

```

Debug :Apu-> nodebug
Apu->

```

```

Apu-> update srom
APU-I ARE YOU READY TO PROGRAM (SROM) ROM DEVICE ? (Y/N) y
APU-I ERASING (SROM) ROM DEVICE
APU-I PROGRAMMING (SROM) ROM DEVICE
APU-I VERIFY LOADED (SROM) ROM IMAGE
APU-I VERIFY LOADED (SROM) ROM IMAGE DONE
APU-I PROGRAMMING (SROM) ROM COMPLETED
Apu->

```

6. Verify that update was successful and exit

```

Apu-> verify
SRM ROM verify successful
ARC /AlphaBIOS ROM verify successful
SROM ROM verify successful

Apu-> exit

```

...Please Cycle System Power ...

7. Update the option firmware. The V5.9 CD supports updates on the PCI options DEFPA (FDDI), KZPSA (SCSI), and the EISA option DEFEA (FDDI).

a. Boot the Option firmware file.

```
>>> boot -fl 0,a0 DKA400
Bootfile: [digitalpw]digitalpw_pci_v7_2.exe for the Personal WorkStation
This filename may change with each new firmware release.
.
.
.
```

```
Copying DFEAA130 from dqa0.0.0.107.0. . .
Copying DFEAB320 from dqa0.0.0.107.0. . .
Copying DFXAA320 from dqa0.0.0.107.0. . .
Copying KZPSAA12 from dqa0.0.0.107.0. . .
```

```
***** Loadable Firmware Update Utility *****
```

```

Function Description

```

```
Display Displays the system's configuration table.
Exit Done exit LFU (reset).
List Lists the device, revision, firmware name, and update revision.
Readme Lists important release information.
Update Replaces current firmware with loadable data image.
Verify Compares loadable and hardware images.
? or Help Scrolls this function table.

```

```
UPD>
```

- b. Use the list command to see what devices are available to update.

```
UPD> list
```

| Device | Current Revision | Filename | Update Revision |
|--------|------------------|----------|-----------------|
| pkb0   | A11              | kzpsa_fw | A12             |
|        |                  | dfeaa_fw | 1.3             |
|        |                  | dfeab_fw | 3.20            |
|        |                  | dfxaa_fw | 3.20            |

- c. Enter the update command to update firmware. (In this example the kzpsa is the only updateable adapter present. If no updateable adapters are present, the message "not supported under LFU" will appear).

```
UPD> update
```

```
Confirm update on:
```

```
pkb0
```

```
[Y/(N)]y
```

```
WARNING: updates may take several minutes to complete for each device.
```

```
DO NOT ABORT!
```

```
pkb0 Updating to A12... Verifying A12... PASSED.
```

```
UPD>
```

8. Power cycle the machine to load console firmware then reset any environmental variables that changed, init and reboot.

## **Compaq Professional Workstation XP1000**

The Compaq Professional WorkStation XP1000 contains a single flash Rom located on the motherboard. It contains SROM code containing Power on Self Test (POST) , ARC console firmware for Windows NT and SRM console firmware for Tru64 UNIX. When ever the motherboard is replaced the firmware may need to be updated. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available.

At this time there are limited ways to upgrade the firmware. The methods available are as follows

- Off the Alpha AXP Systems Firmware Update Utility CD using the local CDROM.
- Off of an InfoServer using the Alpha AXP Systems Firmware Update Utility CD.
- Over the network using the .SYS firmware file.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- Off of a bootable floppy OpenVMS, Unix or NT.
- From the BOOTP server (Unix).

### **Note**

The XP1000 system does not support OpenVMS until console version V5.6. In order to use any OpenVMS method if you have V5.5 SRM console version or earlier, you would need to have a OpenVMS system connected to the network with the XP1000 or have a disk that can be written from OpenVMS and then accessed by the XP1000.

The procedure to update the console firmware is as follows.

- If running WNT you will need to update HAL and PAL before upgrading firmware.
- Determine current console firmware revision by the power on display, SHOW commands.
- Record all console environmental variables by typing SHOW \* at the >>>.
- Print the firmware release notes for that version and system.
- Boot the firmware file (LFU).
- Use the verify and update commands at the prompt.
- When done exit from LFU.
- Reset any environmental variables that were changed and reboot.

1. First upgrade hal and pal code as follows.

- a. Go to the website at <http://www.compaq.com/support/files/alphant/firmware/pwxp1000.html>
- b. Copy the HAL OEM file to you system and unzip it. AB-Hal-XP1000-v570.zip is the current file as of August 1999.
- c. Copy all the files to a regular FAT formatted floppy disk
- d. Boot Windows NT V4.0.
- e. Insert the update floppy from this kit and invoke it by entering **a:\update**
- f. Answer the questions presented in the installation wizard. Compaq recommends that you allow the software to create an uninstall directory; this provides a backup of the older files. If you are asked whether to replace any files, answer "yes."
- g. At the end of this installation procedure, Windows NT will be rebooted automatically.

2. Use one of the following methods to update the firmware



### Method 1 - Load the Console Firmware Off a Local CDROM

- a. Insert the CD in the local CDROM
- b. 

```
>>> boot -fl 0,a0 DKA400
```

  
BOOTFILE: [xp1000]xp1000\_v59\_1.exe  
The filename will change with different console versions.  
  
APU> See below for update steps

### Method 2 - Boot the Console CD Off of an InfoServer

- a. Insert the CD in the InfoServer
- b. 

```
>>> boot ewa0 -file filename
```

 (leave off the .sys extension)

### Method 3 - Booting Off the Network - Need an OpenVMS Host on Network

- a. Copy the firmware.sys file to an existing OpenVMS node on the network.
- b. Set the VMS attributes on the file with the following command.  

```
$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.sys
```
- c. Enable service on that node from NCP  

```
$ MC NCP
```

  
MC NCP> Show Known Circuit Characteristic  
Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41  
  
Circuit = BNA-0 - Circuit name will change from system to system  
State = on  
Service = disabled (if enabled skip to boot command)  
Counter timer = 65534  
Designated router = 28.1023 (CX028A)  
Cost = 4  
Maximum routers allowed = 33  
Router priority = 64  
Hello timer = 15  
Type = Ethernet  
Adjacent node = 28.1023 (CX028A)  
Listen timer = 30  
  
NCP> Set Circ BNA-0 State OFF - This step will stop network activity  
NCP> Set Circ BNA-0 Service Enable  
NCP> Set Circ BNA-0 State ON
- d. 

```
>>> b ewa0 -fi filename
```

 (Leave off .SYS will get an error - BAD MOP FID)

### Method 4 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

#### **Non-System Disk**

- a. Locate the firmware.exe file
- b. Set the attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:  

```
$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.exe
```

```
$ copy/contiguous firmware.exe "non-system_disk":[directory]
```
- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.  
  

```
$ MCR Writeboot
```

  
Update VAX portion of boot block (default is Y): No  
Update Alpha portion of boot block (default is Y): Yes  
Target system device (and boot file if not VMB.EXE): \$1\$dua5: [TEMP] filename.exe

d. >>> **b -fl 0,0 dua5**

#### System Disk

- a. Only steps a and b above are used. Do NOT execute writeboot step c.
- b. Specify the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for bootfile.

```
>>> boot -fl 0,a0 dua0
bootfile: dua0:[sys0.sysexec]xp1000_v59_1.exe
```

#### Method 5 - Boot Off of a Bootable Floppy

##### Windows NT

- a. Copy the firmware file to a FAT formatted floppy with the update image filename a:\fwupdate.exe.
- b. Shut down NT and from the NT Console menu, select " Upgrade AlphaBIOS".

##### TRU64 UNIX

- a. Go to the firmware website at  
<http://ftp.digital.com:80/pub/Digital/Alpha/firmware/readmes/xp1000.html>
- b. Copy the xp1000\_v59\_1.exe file from the above website to your system and rename it fwupdate.exe
- c. Download the file mkbootfirm.tar from the firmware website.  
<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/mkbootfirm.tar>  
You can untar mkbootfirm on your target Tru64 UNIX system with the command:  
**# tar xvf mkbootfirm.tar**
- d. Make sure you have a floppy that has been low-level formatted.  
For example, to low-level format a floppy in drive 0:  
**fddisk -fmt /dev/rfd0a**
- e. Change default to directory with mkbootfirm.exe  
**cd mkbootfirm**
- f. Run mkbootfirm on the .exe firmware image that you downloaded. mkbootfirm uses a .exe firmware image to create a file that can be dd'd to floppy. The following will create a bootable floppy from a downloaded .exe firmware image:  
**./mkbootfirm fwupdate.exe | dd of=/dev/rfd0c bs=64k**

##### OpenVMS AXP

- a. Init and mount to floppy. Create a directory and copy the firmware to the floppy with the following commands.  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) xp1000\_v59\_1.exe**  
\$ **init/dens=HD/index=begin dva0: fwupdate**  
\$ **mount dva0: fwupdate**  
\$ **create/dir dva0:[xp1000]**  
\$ **copy/contiguous xp1000\_v59\_1.exe dva0:[xp1000]fwupdate.exe**
- b. **MCR Writeboot**  
Update VAX portion of boot block (default is Y): **No**  
Update Alpha portion of boot block (default is Y):**Yes**  
[enter AXP bootfile:] **dva0:[xp1000]fwupdate.exe**

- c. Dismount the disk and shutdown VMS.  
\$ **dismount dva0:**
- d. Insert the floppy on the target system and boot it from the >>>.  
>>> **boot dva0**

#### **Method 6 - BOOTP Network Upgrade - TRU64 UNIX**

- a. Mount the Firmware Update CD using the following command:  
# **mount -rt cdifs -o noversion /dev/rz4c /mnt**
- b. Modify or Create the Client Database in the /etc/bootptab File  
**<host>:ht:<hw\_type>:ha=<hw\_addr>:bf=<filename>:ip=<ip\_addr>**  
  
where:  
**host** is the system name in /etc/hosts  
  
**hw\_type** is the hardware type. Proteon is ht = 4.  
Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.  
  
**hw\_addr** is the hardware address: use the console command show device.  
  
**filename** is the name of the default bootfile image:  
  
**ip\_addr** is the Internet protocol address of the system name in /etc/hosts.  
  
The following is an example of a bootptab file for the XP1000 :  
bigsox:ht=1:ha=08002b236423:bf=/mnt/XP1000/XP1000\_V59\_1.EXE;1:ip=16.182.0.87
- c. Modify the /etc/inetd.conf file. Uncommon the tftp and bootps process. It should look like the following example:  
tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt  
bootps dgram upd wait root /usr/sbin/bootpd bootpd
- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**  
# **ps aux | grep ine**  
# **kill process#** <ine process number>
- e. Restart the inetd daemon:  
# **/usr/sbin/inetd**

#### **Note**

The bootpd and tftp daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

**Use Man bootpd and man tftpd**

- f. Enter the following command to boot from the BOOTP server:  
>>> **boot -p bootp ewa0**

Should a boot file "pathname" need to be specified in must be in quotes

>>> **boot -p bootp ewa0 -file "/dir1/dir2/filename"**

3. Type **update** at the Apu-> prompt to update SRM and AlphaBIOS.

```
Apu-> update
APU-I ARE YOU READY TO PROGRAM (SRM) ROM DEVICE ? (Y/N) y
APU-I ERASING (SRM) ROM DEVICE
APU-I PROGRAMMING (SRM) ROM DEVICE
APU-I VERIFY LOADED (SRM) ROM IMAGE
APU-I VERIFY LOADED (SRM) ROM IMAGE DONE
APU-I PROGRAMMING (SRM) ROM COMPLETED
APU-I ERASING (ARC/AlphaBIOS) ROM DEVICE
APU-I PROGRAMMING (ARC/AlphaBIOS) ROM DEVICE
APU-I VERIFY LOADED (ARC/AlphaBIOS) ROM IMAGE
APU-I VERIFY LOADED (ARC/AlphaBIOS) ROM IMAGE DONE
APU-I PROGRAMMING (ARC/AlphaBIOS) ROM COMPLETED
```

Apu->

4. Type **update SROM** to update the POST code
5. After update is completed type **exit**.
6. Power cycle the machine to load console firmware then reset any environmental variables that changed, init and reboot.
7. Update the option firmware. The V5.9 CD supports updates on the PCI options DEFPA (FDDI), KZPSA (SCSI), CCMAB (Memory Channel) and the EISA option DEFEA (FDDI).
  - a. Boot the Option firmware file.

```
>>> boot -fl 0,a0 DKA400
Bootfile: [xp1000]xp1000_pci_v5_9.exe for the XP1000
This filename may change with each new firmware release.
.
<BLACK SCREEN FLASHES HERE>
.
.
E8.E7.E5.E4.
COMPAQ Professional Workstation XP1000 Console X5.4-10224
built on Mar 24 1999 at 11:50:48
Checking dqa0.0.0.107.0 for the option firmware files. . .

Copying DFXAA320 from dqa0.0.0.107.0. . .
Copying KZPSAA12 from dqa0.0.0.107.0. . .
```

\*\*\*\*\* Loadable Firmware Update Utility \*\*\*\*\*

-----  
Function Description  
-----

Display Displays the system's configuration table.  
Exit Done exit LFU (reset).  
List Lists the device, revision, firmware name, and update revision.  
Readme Lists important release information.  
Update Replaces current firmware with loadable data image.  
Verify Compares loadable and hardware images.  
? or Help Scrolls this function table.  
-----

UPD>

- b. Use the list command to see what devices are available to update.

UPD> **list**

| Device | Current Revision | Filename | Update Revision |
|--------|------------------|----------|-----------------|
| pkb0   | A11              | kzpsa_fw | A12             |
|        |                  | dfxaa_fw | 3.20            |

- c. Enter the update command to update firmware. (In this example the kzpsa is the only updateable adapter present. If no updateable adapters are present, the message "not supported under LFU" will appear).

UPD> **update**

Confirm update on:

pkb0

[Y/(N)]**y**

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

pkb0 Updating to A12... Verifying A12... PASSED.

UPD>

8. Power cycle the machine to load console firmware then reset any environmental variables that changed, init and reboot.



## DEC 2000 Model 300/500 AXP and DECpc AXP150

The DEC 2000 Model 300 (Jensen) / Model 500 (Culzean) and DECpc AXP 150 (Jensen) contain flash roms on the system backplane that contain ARC console firmware for Windows NT and SRM console firmware for Tru64 UNIX and OpenVMS. When ever this modules is replaced the firmware will need to be updated. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available. These machine also have a backup console called the failsafe loader. It is enabled for use or writes by two jumpers on the system backplane. The failsafe loader needs to be updated anytime the standard I/O is replaced.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off of an infoservert using the Alpha AXP System Firmware Update Utility CD.
- Over the network using the .SYS firmware file.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- Off of a bootable floppy OpenVMS, Unix or NT.
- From the BOOTP server (Unix).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision.
- Record all console environmental variables by typing SHOW \* at the >>>.
- Determine which method and firmware version will be used to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Locate the appropriate RCU and ECU diskettes if required.
- Set variable OS-TYPE to FLASH\_UPDATE (flash will do).
- Power cycle machine.
- Boot LFU.
- Use the verify and update commands at the UPD> prompt then Exit LFU.
- Set OS\_TYPE to VMS , UNIX or NT.
- Power cycle machine to load the new firmware.

1. Power on the system. The following will display.  
Alpha AXP System - ROM Version 2.1 (This is the ROM Version)  
Copyright © 1993 Digital Equipment Corporation.

Alpha AXP SRM Firmware Version - 36d (This is the Firmware Version)  
System conducting power up tests

```

Devnam Devstat

CPU OK EV4 P2.1 6.6ns
MEM OK 32MB
NVR OK
SCC OK
 IT OK
KBD OK
LPT OK
VGA OK
 NI OK 08-00-2B-2E-31-18 DE422
SCSI OK

```

System power up OK.  
>>>

2. >>> **show \*** to list all environmental variables. Check all customer set variables. Also verify the setting of the following variables.

```
Bootdef dev
Boot_osflags
Auto_action
os_type
```

```
>>> set os_type flash
OS_TYPE = FLASH_UPDATE
```

3. Power cycle machine again.
4. Boot the firmware using one of the following methods

#### **Method 1 - Boot the Console CD Off a Local CDROM**

- a. Insert the CD in the local CDROM.
- b. >>> **b -f1 0,80 dka400**  
INIT-S-CPU...  
AUDIT\_BOOT\_STARTS ...  
AUDIT\_CHECKSUM\_GOOD  
AUDIT\_LOAD\_BEGINS  
AUDIT\_LOAD\_DONE  
Bootfile: **[dec2000]dec2000\_v2\_2.exe**  
\*\*\* FIRMWARE UPDATE UTILITY V2.2 \*\*\*  
\*\*\* SYSTEM TYPE: DEC 2000 AXP \*\*\*  
UPDATE  
VERIFY  
LIST  
?  
UPD>See step 5 below for update procedure.

#### **Method 2 - Boot the Console CD Off of an Infoserwer**

- a. Insert CD in the Infoserwer
- b. >>> **boot <device> -fi dec2000\_v2\_2** (leave off the .sys extension)

#### **Method 3 - Booting Off the Network**

##### **OpenVMS**

- a. Either obtain a copy of the firmware file over the network or from the Internet or load the console CD into a CDROM
- b. \$ **mount dka400 update\_v39** (label will change depending on CD used)  
\$ **copy dka400:[SYS0.SYSEXE]dec2000\_v2\_2.sys mom\$load:**
- c. Set the attributes on the file with the following commands:  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) dec2000\_v2\_2.sys**

- d. Enable service on that node from NCP

```
$ MC NCP
MC NCP> Show Known Circuit Characteristic
Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41
Circuit = BNA-0
State = on
Service = disabled (if enabled skip to boot command)
Counter timer = 65534
Designated router = 28.1023 (CXO28A)
Cost = 4
Maximum routers allowed = 33
Router priority = 64
Hello timer = 15
Type = Ethernet
Adjacent node = 28.1023 (CXO28A) Listen timer = 30

NCP> Set Circ BNA-0 State OFF - This step will stop network activity
NCP> Set Circ BNA-0 Service Enable
NCP> Set Circ BNA-0 State ON
```

- e. >>> boot <device> -fi dec2000\_v2\_2 - or name of firmware file you use.

#### Tru64 UNIX or Ultrix

- a. Copy the firmware file from the CD using the following commands.

```
mount -rt cdfs -o noversion /dev/rz4c /mnt
cp /mnt/DEC2000/dec2000_v2_2.sys
```

- b. Add the node using the ADDNODE command

```
addnode sys -h 08-00-2B-2E-31-81 -l dec2000_v2_2.sys
```

To determine the hardware address enter show device at the >>>

```
>>> show device
BOOTDEV ADDR DEVTYPE RM/FX DEVNAM REV NUMBYTES
----- -
ERA0 08-00-2B-2E-31-81
```

- c. Make sure the mop\_mom process is running by issuing the following command

```
ps aux|grep mop
```

- d. If not running issue the following command to start it.

```
mop_mom
```

- e. >>> boot <device> -fi "dec2000\_v2\_2.sys"

#### Method 4 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

##### Non-System Disk

- a. Locate the firmware.exe file

- b. Set the attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:

```
$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.exe
$ copy/contiguous firmware.exe "non_system_disk":[directory]
```

- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

##### \$ MCR Writeboot

Update VAX portion of boot block (default is Y): No

Update Alpha portion of boot block (default is Y): Yes

Target system device (and boot file if not VMB.EXE):\$1\$dua5:[temp]filename.exe

- d. >>> b -fl 0,0 dua5



## System Disk

- a. Only steps a and b above are used. Do NOT execute writeboot step c.
- b. Specify the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for the bootfile.  
    >>> **b -fl 0,80 dua0**  
bootfile> **dua0:[sys0.sysexec]dec2000\_v2\_2.exe**

## Method 5 - Boot Off of a Bootable Floppy

### OpenVMS AXP

- a. Init and mount the floppy. Create a directory and copy the firmware to the floppy with the following commands. The commands shown are for the AlphaServer 2x00 EV4.  
For all other systems use the directory and files listed in method 1.  
    \$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) dec2000\_v2\_2.exe**  
    \$ **init/dens=HD/index=begin dva0: fwupdate**  
    \$ **mount dva0: fwupdate**  
    \$ **create/dir dva0:[DEC2000]**  
    \$ **copy/contiguous dec2000\_v2\_2.exe dva0:[DEC2100]fwupdate.exe**
- b. **MCR Writeboot**  
Update VAX portion of boot block (default is Y): **No**  
Update Alpha portion of boot block (default is Y): **Yes**  
[enter AXP bootfile:] **dva0:[DEC2000]fwupdate.exe**
- c. Dismount the disk and shutdown VMS.  
    \$ **dismount dva0:**
- d. Insert the floppy on the target system and boot it from the >>>.  
    >>> **boot dva0**

### Tru64 UNIX

- a. Go to the Digital Internet  
<http://ftp.digital.com/pub/Digital/Alpha/firmware/>
  - b. Copy the firmware.exe file from the DEC2000 directory and rename it fwupdate.exe
  - c. Download the file mkbootfirm.tar from the firmware website.  
<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/mkbootfirm.tar>  
  
You can untar mkbootfirm on your target Tru64 UNIX system with the command:  
    # **tar xvf mkbootfirm.tar**
  - d. Make sure you have a floppy that has been low-level formatted.  
For example, to low-level format a floppy in drive 0:  
    **fddisk -fmt /dev/rfd0a**
  - e. Change default to directory with mkbootfirm.exe  
    **cd mkbootfirm**
  - f. Run mkbootfirm on the .exe firmware image that you downloaded. Mkbootfirm uses a .exe firmware image to create a file that can be dd'd to floppy. The following command will create a bootable floppy from a downloaded .exe firmware image:  
    **./mkbootfirm fwupdate.exe | dd of=/dev/rfd0c bs=64k**
- NOTE:** Assumes mkbootfirm.exe is in current directory and floppy is in drive 0.
- g. Insert the floppy on the target system and boot it from the SRM console:  
    >>> **boot dva0**

### Windows NT

- a. Copy the firmware file to a FAT formatted floppy with the update image filename of a:\fwupdate.exe.
- b. Shut down NT and from the NT Console menu, select "Install new firmware".

#### **Method 6 - BOOTP Network Upgrade - Tru64 UNIX**

- a. Mount the Firmware Update CD using the following command:  

```
mount -rt cdfs -o noversion /dev/rz4c /mnt
```
- b. Modify or Create the Client Database in the /etc/bootptab File  

```
<host>:ht:<hw_type>:ha=<hw_addr>:bf=dec2000_v2_2.btp:ip=<ip_addr>
```

where:  
**host** is the system name in /etc/hosts

**hw\_type** is the hardware type. Proteon is ht = 4.  
Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.

**hw\_addr** is the hardware address: use the console command show device.

**filename** is the name of the default bootfile image:

**ip\_addr** is the Internet protocol address of the system name in /etc/hosts.

The following is an example of a bootptab file for the DEC2000:  
bigsox:ht=1:ha=08002b236423:bf=/mnt/DEC2000/DEC2000\_V2\_2.BTP;1:ip=16.182.0.87
- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:  

```
tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt
bootps dgram udp wait root /usr/sbin/bootpd bootpd
```
- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**  

```
ps aux | grep ine
kill process#
```
- e. Restart the inetd daemon:  

```
/usr/sbin/inetd
```

#### **Note**

The bootpd and tftpd daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

**Use Man bootpd and man tftpd**

- f. Enter the following command from the DEC 2000 AXP system to boot from the BOOTP server:  

```
>>> boot ez0x
```

- where x is either A or B. DEC 2000 AXP systems only support booting from the first two cards, either bus A or bus B.

5. Update the firmware at the UPD> prompt.

```
UPD> update
UPDATE SYSTEM ROM DEVICE
UPD-I VERIFY LOADED ROM IMAGE
.....
.....
UPD-I VERIFY LOADED ROM IMAGE DONE
FIRMWARE REVISION: V2.2
LENGTH: 0x100000 -> 1048576 BYTES CHECKSUM: 0x30
MANUFACTURER = AMD (0x01)
DEVICE CODE = 28F010 (0x20) 128K x 8
UPD-I *** ROM CONTENTS WILL BE DESTROYED ***
UPD-I ARE YOU READY TO PROGRAM DEVICE ? (Y/N) Y
UPD-I ROM DEVICE BLOCK ERASED AND PROGRAMMED

 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
UPD-I PROGRAMMING COMPLETED
.....
.....
.....
.....
SYSTEM ROM UPDATE SUCCESSFUL
```

6. Verify the Checksum

```
UPD> verify
VERIFY SYSTEM ROM DEVICE
UPD-I VERIFY LOADED ROM IMAGE
.....
.....

UPD-I VERIFY LOADED ROM IMAGE DONE
.....
.....
.....
.....
SYSTEM ROM DEVICE EXPECT CHECKSUM 0x30
SYSTEM ROM DEVICE ACTUAL CHECKSUM 0X30
SYSTEM ROM DEVICE VERIFY SUCCESSFUL
```

7. Exit UPD> and OS\_TYPE back to original setting and set keyboard type to US.

```
UPD> exit

?05 HLT INSTR
PC= 00000000.000004E4 PSL= 00000000.00001F00
>>> set os_type vms

OS_TYPE = VMS

>>> set keyboard us

KEYBOARD = US
```

8. Power Cycle the machine and reboot.

## **DEC 3000 - All Models**

The console firmware on the DEC 3000 systems is located on the system module for the model 300, on the I/O for the models 400, 600 and 700 and on the system and I/O modules for the models 500, 800 and 900. The firmware must match between the system and I/O modules. They are each enabled with separate jumpers that allow the firmware to be updated. Anytime you replace a system or I/O module, the firmware will most likely need to be upgraded. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available. The 3000 has 3 firmware files. The firmware.exe which has firmware and a CD bootable header, the firmware.btp that is just the firmware and the firmware.sys file that is the firmware plus a mop header.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off of an infoservert using the Alpha AXP System Firmware Update Utility CD.
- Over the network using the .SYS firmware file.
- Off of a non-system disk that has a bootable version of the firmware file (filename.BTP) on it (MCR WRITEBOOT may be required on that file to make it bootable)
- Off of the system disk using either the firmware.btp or firmware.exe on it.
- Off of a bootable floppy.
- From the BOOTP server (Unix).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision by the power up display or with a >>>SHOW CONFIG command, or from online SDA with a CLUE CONFIG command.
- Record all console environmental variables by typing SHOW \* at the >>>.
- Determine which method and firmware version will be used to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Verify the ROM Update Jumpers are in the correct positions
- Boot the firmware file (LFU).
- Use the verify and update commands at the UPD> prompt.
- When done exit from LFU.
- Init the machine and reboot.
- Update Turbochannel options at this time.

1. Power on the get console version info listed on the CPU line.

```
DEC 3000 - M500
Digital Equipment Corporation
System conducting power up tests

Devnam Devstat
 CPU OK KN15-AA -V2.4-S45E-I077-sV1.0-DECchip 21064 P3.0
 ASIC OK
 MEM OK 224MB
 NVR OK
 CXT OK
 SCC OK ptr(0) = Present keybd(2) = Present
 NI OK Ethernet Address: 08-00-2B-33-93-14 , TENBT
 SCSI OK
 ISDN OK

```

```
 CPU OK KN15-AA -V2.4-S45E-I077-sV1.0-DECchip 21064 P3.0
where:
V2.4 = the Firmware revision,
I077 = the I/O Rom Revision,
Sv1.0 = the ROM revision.
```

2. >>> **show \*** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.  
**Bootdef dev**  
**Boot\_osflags**  
**Auto\_action**
3. Check to ROM update jumpers. See the release notes Chapter 2. These show the location of the SYSTEM ROM update jumper. There is also one on the I/O module. Consult the Service Manual for its location and setting.
4. Boot the firmware using one of the following methods.

#### **Method 1 - Boot the Console CD Off a Local CDROM**

- a. Insert the CD in the local CDROM
- b. >>> **boot -fl 0,80 DKA400**  
 BOOTFILE: Enter one of the files listed below. They will change with each CD.  
**[DEC3000]m300\_v7\_0.exe** - for a DEC 3000 Model 300/300L/300X/300LX  
**[DEC3000]m400\_v7\_0.exe** - for a DEC 3000 Model 400/400S/600/600S/700  
**[DEC3000]m500\_v7\_0.exe** - for a DEC 3000 Model 500/500S/500X/800/800S/900  
 UPD> See below for update steps

#### **Method 2 - Boot the Console CD Off of an Infoserwer**

- a. Insert CD in the Infoserwer
- b. >>> **boot esa0 -file filename** (leave off the .sys extension)

#### **Method 3 - Booting Off the Network**

##### **VMS System**

- a. Copy the firmware.sys file to MOM\$LOAD of an existing node in the cluster  
**\$ copy dka400:[dec3000]m300\_v7\_0.sys mom\$load:** - for Dec 3000 model 300  
**\$ copy dka400:[turbochannel]tc\_v2\_2.sys mom\$load** - for turbochannel
- b. Set the attributes on the file with the following commands:  
**\$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.sys**
- c. Enable service on that node from NCP

```

$ MC NCP
MC NCP> Show Known Circuit Characteristic
Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41
Circuit = BNA-0

State = on
Service = disabled (if enabled skip to boot command)
Counter timer = 65534
Designated router = 28.1023 (CX028A)
Cost = 4
Maximum routers allowed = 33
Router priority = 64
Hello timer = 15
Type = Ethernet
Adjacent node = 28.1023 (CX028A)
Listen timer = 30
NCP> Set Circ BNA-0 State OFF - This step will stop network activity
NCP> Set Circ BNA-0 Service Enable
NCP> Set Circ BNA-0 State ON

```

- d. >>> **b esa0 -fi m300\_v7\_0** or **b esa0 -fi tc\_v2\_2**  
 (Leave off .SYS or node that services request will get error - **BAD MOP FID**)

## Ultrix

- a. Mount the Firmware Update CD using the following command:

```
mount -rt cdfs -o noversion /dev/rz4c /mnt
```

- b. Copy the appropriate firmware to the mop directory.

```
cp /mnt/DEC3000/filename /usr/lib/mop/filename
```

The system firmware filename is as follows:

```
[DEC3000]m300_v7_0.sys - DEC 3000 Model 300 AXP system (all types)
```

```
[DEC3000]m400_v7_0.sys - DEC 3000 Model 400/600/700 AXP system (all types)
```

```
[DEC3000]m500_v7_0.sys - DEC 3000 Model 500/800/900 AXP system (all types)
```

The Turbochannel firmware filename is as follows:

```
[TURBOCHANNEL]tc_v2_2.sys - for the turbochannel option firmware.
```

- c. Make sure the mom\_mop process is running under Ultrix with the following command.

```
ps aux | grep mop
```

- d. If not running start it with the following command.

```
mop_mom
```

- e. >>> b esa0 -fi m300\_v7\_0 or b esa0 -fi tc\_v2\_2

## Method 4 - Boot Off of a Disk - Non-System Disk And System Disk Using OpenVMS

### Non-System Disk

- a. Locate the firmware.btp file. The firmware.exe file may also work.

- b. Set the attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:

```
$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) firmware.btp
```

```
$ copy/contiguous firmware.btp "non_system_disk":[directory]
```

- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

```
$ MCR Writeboot
```

```
Update VAX portion of boot block (default is Y): No
```

```
Update Alpha portion of boot block (default is Y):Yes
```

```
Target system device (and boot file if not VMB.EXE):1dua5:[TEMP]m300_v7_0.btp
```

- d. >>> b -fl 0,0 dua5

### System Disk

- a. Locate the firmware.exe, set the attributes but Do NOT execute writeboot step c. The firmware.btp MAY also work with this procedure.

- b. Specify the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for the bootfile.

```
>>> b -fl 0,80 dua0
```

```
bootfile> dua0:[sys0.sysexec]m300_v7_0.exe
```

## Method 5 - Boot Off of a Bootable Floppy

### OpenVMS AXP

- a. Init and mount to floppy. Create a directory and copy the firmware to the floppy with the following commands

```
$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) m300_v7_0.btp
$ init/dens=HD/index=begin dva0: fwupdate
$ mount dva0: fwupdate
$ create/dir dva0:[DEC3000]
$ copy/contiguous M300_v7_0.btp dva0:[dec3000]fwupdate.exe
```
- b. **MCR Writeboot**  
Update VAX portion of boot block (default is Y): **No**  
Update Alpha portion of boot block (default is Y): **Yes**  
[enter AXP bootfile:] **dva0:[dec3000]fwupdate.exe**
- c. Dismount the disk and shutdown VMS.  
**\$ dismount dva0:**
- d. Insert the floppy on the target system and boot it from the >>>.  
>>> **boot dva0**

### Tru64 UNIX

- a. Go to the Digital Internet firmware site at  
<http://ftp.digital.com/pub/Digital/Alpha/firmware/>
  - b. Copy the firmware.btp file from the DEC3000 directory to your system and rename it fwupdate.exe
  - c. Download the file mkbootfirm.tar from the firmware website.  
<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/mkbootfirm.tar>  
  
You can untar mkbootfirm on your target Tru64 UNIX system with the command:  
**# tar xvf mkbootfirm.tar**
  - d. Make sure you have a floppy that has been low-level formatted.  
For example, to low-level format a floppy in drive 0:  
**fddisk -fmt /dev/rfd0a**
  - e. Change default to directory with mkbootfirm.exe  
**cd mkbootfirm**
  - f. Run mkbootfirm on the .exe firmware image that you downloaded. Mkbootfirm uses a .exe firmware image to create a file that can be dd'd to floppy. The following command will create a bootable floppy from a downloaded .exe firmware image:  
**./mkbootfirm fwupdate.exe | dd of=/dev/rfd0c bs=64k**
- NOTE:** Assumes mkbootfirm.exe is in current directory and floppy is in drive 0.
- g. Insert the floppy on the target system and boot it from the SRM console:  
>>> **boot dva0**

## Method 6 - BOOTP Network Upgrade - Tru64 UNIX

- a. Mount the Firmware Update CD using the following command:

```
mount -rt cdfs -o noversion /dev/rz4c /mnt
```

- b. Modify or Create the Client Database in the /etc/bootptab File  
<host>:ht:<hw\_type>:ha=<hw\_addr>:bf=<filename>:ip=<ip\_addr>

where:

**host** is the system name in /etc/hosts

**hw\_type** is the hardware type. Proteon is ht = 4.

Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.

**hw\_addr** is the hardware address: use the console command show device.

**filename** is the name of the default bootfile image:

**ip\_addr** is the Internet protocol address of the system name in /etc/hosts.

The following is an example of a bootptab file for the DEC3000:

```
bigsox:ht=1:ha=08002b236423:bf=/mnt/DEC3000/M300_v7_0.BTP;1:ip=16.182.0.88
```

```
bigsox:ht=1:ha=08002b236423:bf=/mnt/DEC3000/M400_v7_0.BTP;1:ip=16.182.0.88
```

```
bigsox:ht=1:ha=08002b236423:bf=/mnt/DEC3000/M500_v7_0.BTP;1:ip=16.182.0.88
```

```
bigsox:ht=1:ha=08002b236423:bf=/mnt/DEC3000/tc_v2_2.btp;1:ip=16.182.0.88
```

- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:

```
tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt
```

```
bootps dgram udp wait root /usr/sbin/bootpd bootpd
```

- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**

```
ps aux | grep ine
```

```
kill process# <ine process number>
```

- e. Restart the inetd daemon:

```
/usr/sbin/inetd
```

### Note

The bootpd and tftpd daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

**Use Man bootpd and man tftpd**

- f. Enter the following command from the DEC 3000 AXP system to boot from the BOOTP server:

```
>>> boot ez0
```

5. Update the system and I/O roms from the UPD> prompt

```
UPD> update
```

```
Read IO ROM Device ID
```

```
UPD-I VERIFY LOADED ROM IMAGE
```

```
.....
```

```
UPD-I VERIFY LOADED ROM IMAGE DONE
```

```
MANUFACTURER = INTEL (0x89)
```

```
DEVICE CODE = 28F020 (0xbd) 256K x 8
```

```
UPDATE SYSTEM ROM DEVICE
```

```
UPD-I VERIFY LOADED ROM IMAGE
```

```
.....
```

```
UPD-I VERIFY LOADED ROM IMAGE DONE
```

```
FIRMWARE REVISION: V6.2 LENGTH: 0x35F50 ->
```

```
221008 BYTES CHECKSUM: 0x91
```

```
MANUFACTURER = INTEL (0x89)
```

```
DEVICE CODE = 28F020 (0xbd) 256K x 8
```

```
UPD-I *** ROM CONTENTS WILL BE DESTROYED ***
```

```
UPD-I ARE YOU READY TO PROGRAM DEVICE ? (Y/N)Y
```

```
UPD-I PRECHARGING DEVICE
```

```
.....
```



```

UPD-I ERASING ROM DEVICE
.....
UPD-I PROGRAMMING DEVICE
.....
UPD-I PROGRAMMING COMPLETED
.....
SYSTEM ROM UPDATE SUCCESSFUL
UPDATE IO ROM DEVICE
UPD-I VERIFY LOADED ROM IMAGE
.....
UPD-I VERIFY LOADED ROM IMAGE DONE
FIRMWARE REVISION: V6.2 LENGTH: 0x35bd8 ->
220120 BYTES CHECKSUM: 0x43
MANUFACTURER = INTEL (0x89)
DEVICE CODE = 28F020 (0xbd) 256K x 8
UPD-I PRECHARGING DEVICE
.....
UPD-I ERASING ROM DEVICE
.....
UPD-I PROGRAMMING DEVICE
.....
UPD-I PROGRAMMING COMPLETED
.....
IO ROM UPDATE SUCCESSFUL
UPD> exit

```

6. Power cycle the machine to load the new firmware into memory.
7. Update the Turbochannel option firmware use the following steps. See methods 3 and 5 for network update

- a. Boot the firmware update CDROM.
 

```

>>> boot -fl 0,80 dka400
>>> boot -fl 0,80 "2/dka400" - Boot off of DKA400 on Turbochannel slot 2.

```

BOOTFILE: [TURBOCHANNEL] tc\_v2\_2.exe

```

*** TURBOchannel Firmware Update Utility V2.1 ***
UPDATE n
REPAIR n
VERIFY n
SHOW n
LIST
HELP
EXIT/QUIT
TC_UPD>

```

- b. Type help to get info on turbochannel update commands.
 

```

TC_UPD> help

```

The help command displays a brief description of the update-related commands. The help commands are described in the following table:

| <u>Command</u> | <u>Description</u>                                                                                                                                                                                                                                                                                                                                                  |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| update n       | Updates the option ROM in TURBOchannel slot n. The module name in the adapter's ROM header must match one of the loaded images.                                                                                                                                                                                                                                     |
| repair n       | Repairs (updates) an adapter ROM that is not properly recognized by the system. Use the repair command to modify the module name in the adapter ROM header.                                                                                                                                                                                                         |
| verify n       | Verifies the option ROM checksum in TURBOchannel slot n. If an option is already at the same revision as found in this Firmware Update Utility and the verify command is entered, prior to updating the option's firmware, the verify command may report mismatched checksums. This is due to the method in which ROMs are loaded during the manufacturing process. |

show n        Shows the checksum and ROM revision for the slot n option ROM and its corresponding loaded image.

list         Displays the loaded images and flash memories supported.

- Use the list command to show a list of memory-loaded images, plus a list of currently supported flash ROMs:

c. Type list to see the supported options

TC\_UPD> **list**

| Image name | Revision |
|------------|----------|
| AV300-AA   | V1.1     |
| KZTSA      | A11      |
| PMAF-FA    | V3.1A    |
| PMAF-FD    | V3.1D    |
| PMAF-FS    | V3.1S    |
| PMAF-FU    | V3.1U    |
| PMAGB-BA   | V1.1     |
| PMAGC-AA   | V1.2     |
| PMAGC-BA   | V1.2     |
| PMAT-AA    | V2.8     |
| PMAZB-AA   | V2.0     |
| PMAZC-AA   | V2.3     |
| PMAGD      | BL2.1    |
| PMAGD-AA   | BL2.1    |
| DGLTA-FA   | V1.1     |

Flash memory devices supported:

AMD:28F020 (256Kx8)

Intel:28F512 (64Kx8), 28F010 (128Kx8), 28F020 (256Kx8) 28F256A, 28F256B, 28F256X

d. Use the update command to update a specific turbochannel option by slot.

TC\_UPD> **update 5** - update the turbochannel option in slot 5.

UPDATE TURBOchannel slot 5 ROM

```
.....
MANUFACTURER = AMD (0x01)
DEVICE CODE = 28F020 (0x2a) 256K x 8
Slot 5 ROM: PMAGB-BA V1.0
Loaded image: PMAGB-BA V1.1
TC_UPD-I *** ROM CONTENTS WILL BE DESTROYED ***
TC_UPD-I ARE YOU READY TO PROGRAM DEVICE (Y/N)? Y
TC_UPD-I PRECHARGING DEVICE
.....
TC_UPD-I ERASING ROM DEVICE
.....
TC_UPD-I PROGRAMMING DEVICE
.....
TC_UPD-I PROGRAMMING COMPLETED
TC_UPD-I *** Slot 5 ROM update successful ***
```

#### Note

Slot 5 ROM: PMAGB-BA V1.0 indicates the current ROM revision.

Loaded image: PMAGB-BA V1.1 indicates the new ROM revision.

e. Use the show command to see the new version.

TC\_UPD> **show 5** - Check the updated firmware version

SHOW TURBOchannel slot 5 ROM Revision

Slot 5 ROM: PMAGB-BA V1.1

Loaded image: PMAGB-BA V1.1

- f. Use the repair command if one of the following occurs.
- The system doesn't recognize the adapter, or the adapter has an empty flash ROM.
  - The update command returns a failure message saying that a repair may be needed.
  - The information to be changed in the adapter flash ROM includes the name of the adapter (stored in the ROM header).
  - If a power failure occurs during the upgrade.

TC\_UPD> **repair 5**

TC\_UPD-I \*\*\* REPAIR command entered \*\*\*

select an image:

| Image name | Revision |
|------------|----------|
| AV300-AA   | V1.1     |
| KZTSA      | A11      |
| PMAF-FA    | V3.1A    |
| PMAF-FS    | V3.1S    |
| PMAF-FD    | V3.1D    |
| PMAF-FU    | V3.1U    |
| PMAGB-BA   | V1.1     |
| PMAGC-AA   | V1.2     |
| PMAGC-BA   | V1.2     |
| PMAT-AA    | V2.8     |
| PMAZB-AA   | V2.0     |
| PMAZC-AA   | V2.3     |
| PMAGD      | BL2.1    |
| PMAGD-AA   | BL2.1    |
| DGLTA-FA   | V1.1     |

-----

|          |       |
|----------|-------|
| AV300-AA | V1.1  |
| KZTSA    | A11   |
| PMAF-FA  | V3.1A |
| PMAF-FS  | V3.1S |
| PMAF-FD  | V3.1D |
| PMAF-FU  | V3.1U |
| PMAGB-BA | V1.1  |
| PMAGC-AA | V1.2  |
| PMAGC-BA | V1.2  |
| PMAT-AA  | V2.8  |
| PMAZB-AA | V2.0  |
| PMAZC-AA | V2.3  |
| PMAGD    | BL2.1 |
| PMAGD-AA | BL2.1 |
| DGLTA-FA | V1.1  |

Image name (Q to quit this function)? **pmagb-ba**

.....

MANUFACTURER = AMD (0X01)

DEVICE CODE = 28F020 (0X2A) 256K X 8

Slot 5 ROM: - Not a valid ASCII string-

Loaded image: PMAGB-BA V1.1

TC\_UPD-I \*\*\* ROM CONTENTS WILL BE DESTROYED \*\*\*

TC\_UPD-I ARE YOU READY TO PROGRAM DEVICE (Y/N)? **Y**

TC\_UPD-I PRECHARGING DEVICE

.....

TC\_UPD-I ERASING ROM DEVICE

.....

TC\_UPD-I PROGRAMMING DEVICE

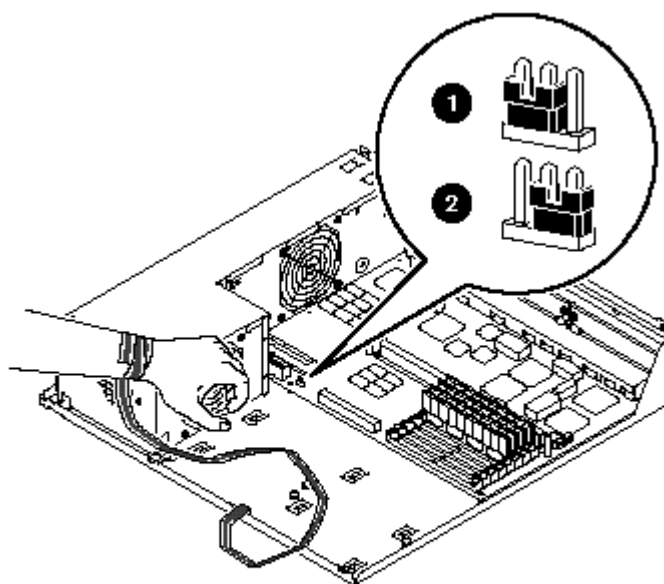
.....

TC\_UPD-I PROGRAMMING COMPLETED

TC\_UPD-I \*\*\* SLOT 5 ROM UPDATE SUCCESSFUL \*\*\*

## DEC 3000 Model 300 Jumpers

### Rom Update Jumper



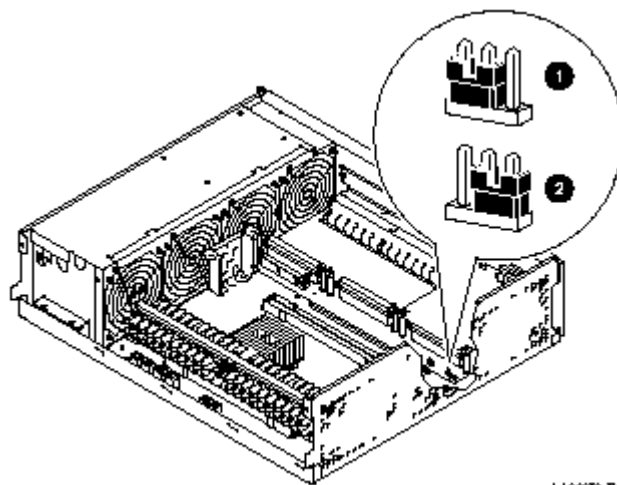
MLQ-010745

- ① Enabled
- Disabled

## DEC 3000 Model 400, 600 and 700 Jumper Location

### ROM Update Jumper

The ROM update jumper has two positions. Disabled is position 1 and Enabled is position 2. The factory default setting is in the enabled.



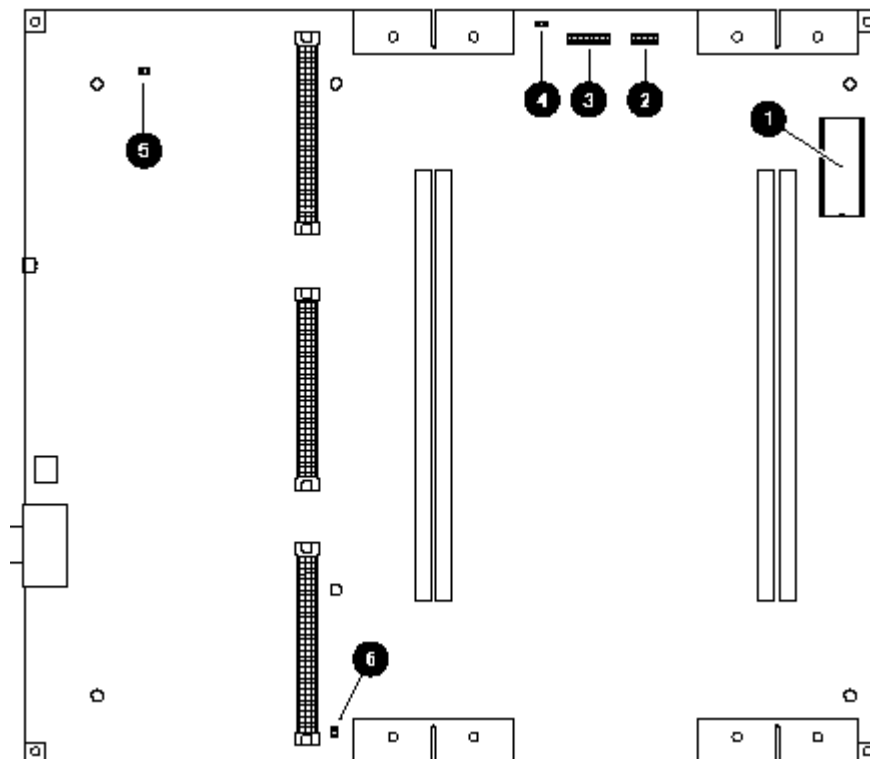
LA-042879-110



## DEC 3000 Model 500, 500S, 500X Jumper Locations

### System Module

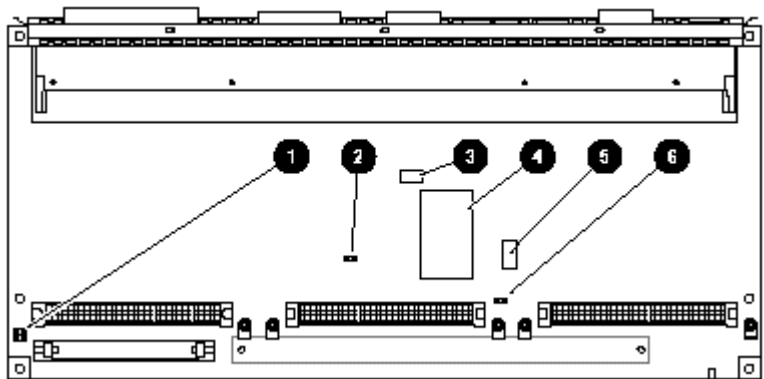
The following figure shows the location of jumpers and the serial ROM on the system module. The table below describes each location



| System Module Jumper Locations |                           |                             |                              |
|--------------------------------|---------------------------|-----------------------------|------------------------------|
| Feature                        | Description               | Components                  | Default Setting              |
| 1                              | Serial ROM                | -                           | -                            |
| 2                              | Not used (500/500S)       | Reference only.             | All jumpers must be removed. |
|                                | Remote sense cable (500X) | Must be installed           | Installed                    |
| 3                              | Serial ROM jumpers        | -                           | Jumper location 0 only.      |
| 4                              | Not used (500/500S)       | Reference only.             | All jumpers must be removed. |
|                                | 200 MHz jumper (500X)     | Must be installed           | Enabled                      |
| 5                              | Test pins                 | Used by engineering         | -                            |
| 6                              | Flash enable jumper       | In = Enabled / Out Disabled | Disabled                     |

### I/O Module

The following figure shows the location of the jumpers, Enet address ROM chip, TOY/NVR chip and the flash ROM on the I/O module. The table below describes each location

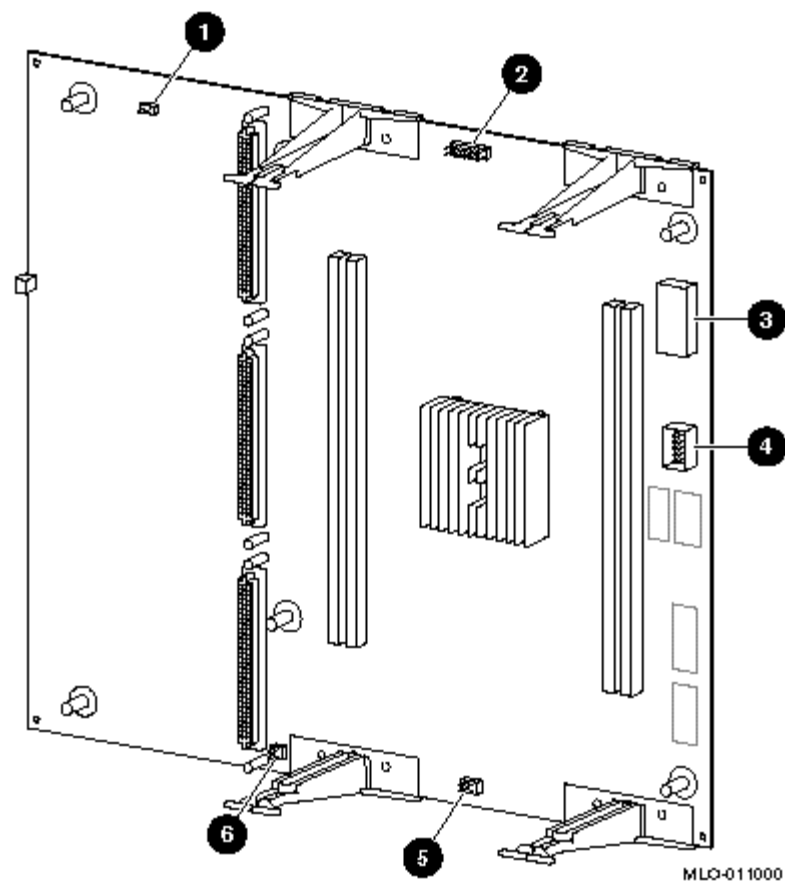


| I/O Module Jumpers |                       |                               |                 |
|--------------------|-----------------------|-------------------------------|-----------------|
| Feature            | Description           | Components                    | Default Setting |
| 1                  | Park location         | Used to store unused jumpers  | -               |
| 2                  | Console secure jumper | In = Enabled / Out = Disabled | Disabled        |
| 3                  | Enet address ROM chip | -                             | -               |
| 4                  | TOY/NVR chip          | -                             | -               |
| 5                  | Flash ROM             | -                             | -               |
| 6                  | Flash ROM jumper      | In = Enabled / Out = Disabled | Enabled         |

**DEC 3000 Model 800 and 900 ROM Update Jumper Locations**

**System Module Jumpers**

The following figure shows the location of jumpers and the serial ROM on the system module. The table below describes each location

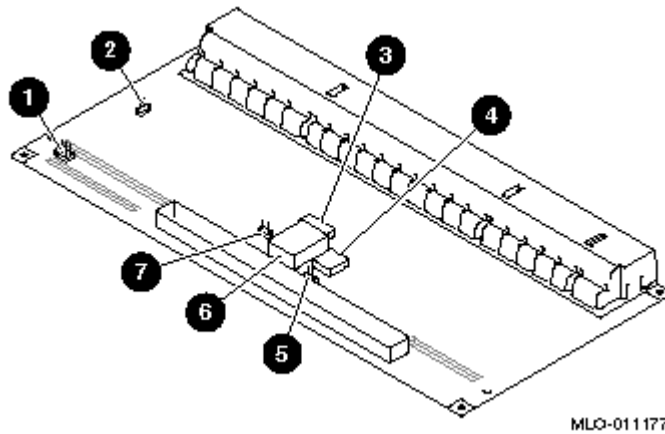


| System Module Jumpers |                         |                         |                 |
|-----------------------|-------------------------|-------------------------|-----------------|
| Feature               | Description             | Comments                | Default Setting |
| 1                     | Test Pins               | Used by engineering     | -               |
| 2                     | Serial ROM jumpers      | Jumper location 0 only  | Installed       |
| 3                     | Serial ROM              | -                       | -               |
| 4                     | Serial ROM test port    | -                       | -               |
| 5                     | Clock divider jumpers   | -                       | Installed       |
| 6                     | Flash ROM update jumper | J19 = Park J20 = Enable | Enabled         |



## I/O Module Jumpers

The following figure shows the location of the jumpers, Enet address ROM chip, TOY/NVR chip and the flash ROM on the I/O module. The picture shows the back of the I/O module. The table below describes each location



| I/O Module Jumpers |                          |                                                |                 |
|--------------------|--------------------------|------------------------------------------------|-----------------|
| Feature            | Description              | Components                                     | Default Setting |
| 1                  | Park location            | Used to store unused jumpers                   |                 |
| 2                  | Active terminator enable | In = Enabled (terminator ON)<br>Out = Disabled | Enabled         |
| 3                  | Enet address ROM chip    | Socketed                                       |                 |
| 4                  | Flash ROM                |                                                |                 |
| 5                  | Flash ROM jumper         | In = Enabled / Out = Disabled                  | Enabled         |
| 6                  | TOY/NVR chip             | Socketed                                       |                 |
| 7                  | Console secure jumper    | In = Enabled / Out = Disabled                  | Disabled        |

## DEC 4000 - Models 600 and 700

The console firmware on the DEC 4000 systems is located on the I/O modules. Anytime you replace an I/O module, the firmware will most likely need to be upgraded. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off of an infoservert using the Alpha AXP System Firmware Update Utility CD.
- Over the network using the .SYS firmware file.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).
- From the BOOTP server.

The procedure to update the console firmware is as follows.

- Determine current console firmware revision by the power up display or with a >>>SHOW CONFIG command, or from online SDA with a CLUE CONFIG command.
- Record all console environmental variables by typing SHOW \* at the >>>.
- Determine which method and firmware version will be used to do the update.
- Print the firmware release notes for that version and system.
- Determine if any option firmware will be upgraded.
- Boot the firmware file (LFU).
- Use the verify and update commands at the UPD> prompt.
- When done exit from LFU.
- Init the machine and reboot.

1. Type show config to get the current console version. Note the Console version on the first line and also the processor revision. This is the number on the second line after the 21064 value. In this example it is a 3. This determines which file you will use.

For processor revision number 2 use [DEC4000]CFW\_V\*\*\_UPDP2.EXE.

For processor revision number 3 use [DEC4000]CFW\_V\*\*\_UPDP3.EXE.

```
>>> show config
Console V3.6-1 VMS PALcode X5.48A, OSF PALcode X1.
CPU 0 P B2001-BA DECchip (tm) 21064-3
CPU 1 P B2001-BA DECchip (tm) 21064-3
Memory 0 P B2002-DA 128 MB
Memory 1 P B2002-DA 128 MB
Memory 2 P B2002-CA 64 MB
Memory 3 P B2002-CA 64 MB
Ethernet 0 P 08-00-2B-3E-18-CC
Ethernet 1 P 08-00-2B-3E-18-CD

 ID 0 ID 1 ID 2 ID 3 ID 4 ID 5 ID 6

A DSSI P RF74
B DSSI P RF36 RF36
C P
D P
E SCSI P RRD42
Futurebus+ P FBC0
System Status Pass Type b to boot
```

2. Set Auto\_action to halt  
>>> set Auto\_action halt

3. Boot the firmware using one of the following methods.

#### Method 1 - Boot the Console CD Off a local CDROM

- a. Insert the CD in the local CDROM
- b. >>> **boot -fl 0,a0 DKE0**  
BOOTFILE: [dec4000]cfw\_v40\_updp3.exe  
The filename will change with different console versions.  
  
UPD> See below for update steps

#### Method 2 - Boot the Console CD Off of an Infoserver

- a. Insert CD in the Infoserver
- b. >>> **boot eza0 -file filename** (leave off the .sys extension)

#### Method 3 - Booting Off the Network

##### **VMS System**

- a. Copy the firmware.sys file to MOM\$LOAD of an existing node in the cluster
- b. Set the attributes on the file with the following commands:  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) cfw\_v40\_updp3.sys**
- c. Enable service on that node from NCP

\$ **MC NCP**

MC NCP> **Show Known Circuit Characteristic**

Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

Circuit = BNA-0

|                         |                                              |
|-------------------------|----------------------------------------------|
| State                   | = on                                         |
| Service                 | = disabled (if enabled skip to boot command) |
| Counter timer           | = 65534                                      |
| Designated router       | = 28.1023 (CX028A)                           |
| Cost                    | = 4                                          |
| Maximum routers allowed | = 33                                         |
| Router priority         | = 64                                         |
| Hello timer             | = 15                                         |
| Type                    | = Ethernet                                   |
| Adjacent node           | = 28.1023 (CX028A)                           |
| Listen timer            | = 30                                         |

NCP> **Set Circ BNA-0 State OFF - This step will stop network activity**

NCP> **Set Circ BNA-0 Service Enable**

NCP> **Set Circ BNA-0 State ON**

- d. >>> **b eza0 -fi CFW\_V40\_UPDP3**  
(Leave off .SYS or node that services request will get an error - BAD MOP FID)

#### Method 4 - Boot Off of a Disk -Non-System Disk and System Disk Using OpenVMS

##### **Non-System Disk**

- a. Locate the firmware.exe file
- b. Set the attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) CFW\_V40\_UPDP3.exe**  
\$ **copy/contiguous CFW\_V40\_UPDP3.exe "non\_system\_disk":[directory]**

- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

**\$ MCR Writeboot**

Update VAX portion of boot block (default is Y): **No**  
Update Alpha portion of boot block (default is Y): **Yes**  
Target system device (and boot file if not VMB.EXE): **\$1\$dua5: [TEM] CFW\_V40\_UPDP3.EXE**

- d. **>>> b -fl 0,0 dua5**

**System Disk**

- a. Only steps a and b above are used. Do NOT execute writeboot step c.
- b. Specify the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for the bootfile.  
**>>> b -fl 0,80 dua0**  
bootfile> **dua0:[sys0.sysexec]cfw\_v40\_updp3.exe**

**Method 5 - BOOTP Network Upgrade - Tru64 UNIX**

- a. Mount the Firmware Update CD using the following command:  
**# mount -rt cdafs -o noversion /dev/rz4c /mnt**
- b. Modify or Create the Client Database in the /etc/bootptab File  
**<host>:ht:<hw\_type>:ha=<hw\_addr>:bf=<filename>:ip=<ip\_addr>**  
  
where:  
**host** is the system name in /etc/hosts  
  
**hw\_type** is the hardware type. Proteon is ht = 4.  
Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.  
  
**hw\_addr** is the hardware address: use the console command show device.  
  
**filename** is the name of the default bootfile image:  
  
**ip\_addr** is the Internet protocol address of the system name in /etc/hosts.  
  
The following is an example of a bootptab file for the DEC4000:  
**bigsox:ht=1:ha=08002b236423:bf=/mnt/DEC4000/CFW-V39\_UPDP3.EXE;1:ip=16.182.0.88**
- c. Modify the /etc/inetd.conf file. Uncomment the tftp and bootps process. It should look like the following example:  
**tftp dgram udp wait root /usr/sbin/tftpd tftpd /mnt**  
**bootps dgram udp wait root /usr/sbin/bootpd bootpd**
- d. Find the process /usr/sbin/inetd daemon: **This step will stop network traffic**  
**# ps aux | grep ine**  
**# kill process# <ine process number>**
- e. Restart the inetd daemon:  
**# /usr/sbin/inetd**

**Note**

The bootpd and tftp daemon will be removed if the system is rebooted.  
Refer to the manual pages: bootpd(8) or tftpd(8) for more information.  
**Use Man bootpd and man tftpd**

- f. Enter the following command from the DEC 3000 AXP system to boot from the BOOTP server:  
**>>> boot ez0**

4. Update the firmware from the UPD> prompt type update \* or update IO.

```
UPD> update *
```

```
Confirm update on:
```

```
fbcd
```

```
io
```

```
[Y/(N)] Y
```

```
WARNING: updates may take several minutes to complete for each device.
```

```
DO NOT ABORT!
```

```
fbcd Updating to ... Verifying ... PASSED.
```

```
io Updating to 3.8... Verifying 3.8... PASSED.
```

```
To update only the console, enter the update io command.
```

```
UPD> exit
```

5. Power cycle the machine to load the new firmware into memory.

## DEC 7000/10000

The console firmware on the DEC 7000/10000 systems is located on the CPU module. All Cpu's must run the same version of firmware. You can **NOT** have mixed versions and expect it to work. Any time a CPU module is added or replaced, the firmware will most likely need to be upgraded. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the Alpha AXP System Firmware Update Utility CD using the local CDROM.
- Off of an infoserwer using the Alpha AXP System Firmware Update Utility CD.
- Over the network using the .SYS firmware file.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision.
  - Record all console environmental variables by typing SHOW \* at the >>>.
  - Determine which method and firmware version will be used to do the update.
  - Print the firmware release notes for that version and system.
  - Determine if any option firmware will be upgraded.
  - Locate the appropriate RCU and ECU diskettes if required.
  - Boot the firmware file (LFU).
  - Use the verify and update commands at the function? prompt.
  - When done exit from LFU.
  - Execute a Build NVR and a Build EEPROM at the >>> for each CPU.
  - Init the machine and reboot.
1. First type INIT at the >>> the see what the current version of console loaded is. It is at the very bottom of the configuration map.

```
>>> init
F E D C B A 9 8 7 6 5 4 3 2 1 0 NODE #
 A M P P TYP
 O + + + ST1
 E B BPD
 O + + + ST2
 E B BPD
 + + + + ST3
 E B BPD

 + . + . + . + + C0 XMI +
 C1
 C2
 C3

 . A0 ILV
 . 128 128MB

Firmware Rev = V3.2-4445 SROM Rev = V2.2-0 SYS SN = SG000000000
```

2. P00>>> **show \*** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.

```
Bootdef_dev
Boot_osflags
Auto_action
```

- a. Set Auto\_action to HALT  
P00>>> **set Auto\_action halt**

3. Boot the firmware using one of the following methods.

### Method 1 - Boot the Console CD Off a Local CDROM

- a. Insert the CD in the local CDROM
- b. P00>>> **boot -fl 0,80 DKA600**  
Bootfile: [DEC7000] **axp7000\_v18.exe** - for the DEC 7000  
Bootfile: [DEC10000] **axp7000\_v18.exe** - for the DEC 10000  
  
Function? See below for update steps

### Method 2 - Boot the Console CD Off of an Infoserver

- a. Insert CD in the Infoserver
- b. P00>>> **boot exa0 -file axp7000\_v18** (leave off the .sys extension)

### Method 3 - Booting off the Network

- a. Copy the firmware.sys file to MOM\$LOAD of an existing node in the cluster
- b. Set the attributes on the file with the following commands:  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) axp7000\_v18.sys**
- c. Enable service on that node from NCP

```
$ MC NCP
MC NCP> Show Known Circuit Characteristic

Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

Circuit = BNA-0

State = on
Service = disabled (if enabled skip to boot command)
Counter timer = 65534
Designated router = 28.1023 (CX028A)
Cost = 4
Maximum routers allowed = 33
Router priority = 64
Hello timer = 15
Type = Ethernet
Adjacent node = 28.1023 (CX028A)
Listen timer = 30
NCP> Set Circ BNA-0 State OFF - This step will stop network activity
NCP> Set Circ BNA-0 Service Enable
NCP> Set Circ BNA-0 State ON
```

- d. P00>>> **boot -fl 0,0 EXA0 -fi axp7000\_v18**  
(Leave off .SYS or node that services request will get error - **BAD MOP FID**)  
Function?  
  
DEMNA = EXA0 - Determine device name with SHOW DEVICE at >>> .  
DEMFA = FXA0

### Method 4 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS

#### **Non-System Disk**

- a. Locate the axp7000\_v18.exe file
- b. Set the attributes on the file and copy it contiguous to the target disk (non-system) and directory with the following commands:  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) axp7000\_v18.exe**  
\$ **copy/contiguous axp7000\_v18.exe "non\_system\_disk":[directory]**
- c. Use writeboot to make the disk bootable. Specify the disk, directory

and filename of the firmware. Take the defaults for the other questions.

#### \$ MCR Writeboot

Update VAX portion of boot block (default is Y): **No**

Update Alpha portion of boot block (default is Y): **Yes**

Target system device (and boot file if not VMB.EXE): **\$1\$dua5:[TEMP]axp7000\_v18.exe**

d. P00>>> **b -fl 0,0 dua5**

#### System Disk

a. Only steps a and b above are used. Do NOT execute writeboot step c.

b. Specify the flags of 0,a0 and use "system disk":[sys0.sysexec]filename for the bootfile.

>>> **b -fl 0,80 dua0**

bootfile> **dua0:[sys0.sysexec]axp7000\_v18.exe**

4. Update the firmware at the Function? prompt. Use **Update \*** or **Update KN7AA, CIXCD0, UNKNOWN0 etc.**

a. Function? **update kn7aa0** - to update cpu kn7aa0 only.

Confirm Update on:

Kn7aa-ab0

[Y/N] **Y**

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

kn7aa0 Updating to 4.9... Reading Device... Verifying 4.9... PASSED.

Function? **update \*** - to update all devices supported buy this version of LFU.

|        | Name  | Type   | Rev  | Mnemonic | FW Rev | HW Rev |
|--------|-------|--------|------|----------|--------|--------|
| LSB    |       |        |      |          |        |        |
| 0+     | KN7AA | (8001) | 400D | kn7aa0   |        | M      |
| 1+     | KN7AA | (8001) | 400D | kn7aa1   |        | M      |
| 6+     | MS7AA | (4000) | 0000 | ms7aa0   |        |        |
| 8+     | IOP   | (2000) | 0006 | iop0     |        |        |
| CO XMI |       |        |      | xmi0     |        |        |
| 3+     | KZMSA | (0C36) | 5142 | kzmsa0   | 5.6    | F01    |
| 8+     | DWLMA | (102A) | 0104 | dwlma    |        |        |
| C+     | KDM70 | (0C22) | 2811 | kdm700   | 4.4    |        |
| E+     | DEMNA | (0C03) | 0803 | demna0   | 9.4    |        |

Update ALL devices? [Y/(N)] **Y**

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

kn7aa0 Updating to 4.9... Reading Device... Verifying 4.9... PASSED.

kn7aa1 Updating to 4.9... Reading Device... Verifying 4.9... PASSED.

ms7aa0 Not supported under LFU.

iop0 Not supported under LFU.

dwlma0 Not supported under LFU.

WARNING: Updates may take several minutes to complete for each device.

DO NOT ABORT!

kzmsa0 Updating to 5.6... Reading Device... Verifying 5.6... PASSED.

WARNING: Updates may take several minutes to complete for each device.

DO NOT ABORT!

kdm700 Updating to 4.4... Reading Device... Verifying 4.4... PASSED.

WARNING: Updates may take several minutes to complete for each device.



DO NOT ABORT!

demna0 Updating to 9.4... Reading Device... Verifying 9.4... PASSED.

WARNING: Updates may take several minutes to complete for each device.

- b. Function? **exit**  
System initializes now and prints configuration map.
- c. P00>>> **build nvr**
- d. P00>>> **build eeprom**  
Create new EEPROM image [Y/(N)]? **y**
- e. P00>>> **set CPU #** , where # is the other CPU numbers. Must do all CPUs.
- f. If you get the following message do a SET CONFIG at the >>>.  
System configuration has changed since last saved configuration!  
>>> **set config** - clears above error message
- g. The default console baud rate is set to 9600 . If needed change it now.  
P00>>> **set baud 2400**  
baud set to 2400
- h. P00>>> **set Bootdef\_dev**  
**set Boot\_osflags**  
**set Auto\_action**  
**set System\_variant 1** (1 for a DEC 10000, 0 for a DEC 7000)
- i. P00>>> **build seeprom \*** - initializes the SEEPROM for the DWLAA, DWLMA, IOP, MS7AA and MS7BB modules. The serial EEPROM holds module serial number, module part number, module firmware revision (not used) , TDD (test directed diagnosis) and SDD (symptom directed diagnosis) info  
  
Create new serial EEPROM image for ms7aa0 [Y/(N)]? **Y**  
Creating new serial EEPROM image for ms7aa0  
Module Serial Number> **sg1234567**  
Module Unified 2-5-2.4 Part Number> **20-E2043-AA.0000**  
Module Firmware Revision> **xx**  
please wait ~1 min, writing ms7aa0  
Create new serial EEPROM image for iop0 [Y/(N)]? **Y**  
Creating new serial EEPROM image for iop0  
Module Serial Number> **sg1234567**  
Module Unified 2-5-2.4 Part Number> **20-E2044-AA.0000**  
Module Firmware Revision> **xx**  
please wait ~1 min, writing iop0  
  
Create new serial EEPROM image for dwlma0 [Y/(N)]? **Y**  
Creating new serial EEPROM image for dwlma0  
Module Serial Number> **sg1234567**  
Module Unified 2-5-2.4 Part Number> **20-T2028-AA.0000**  
Module Firmware Revision> **xx**  
please wait ~1 min, writing dwlma0
- j. P00>>> **init**

There is one other **UNRECOMMENDED** method for updating firmware from an existing CPU's EEPROM. That is the use of the UPDATE command to copy one CPU's EEPROM info to another CPU's EEPROM area. The problem with this command is if the EEPROM format does not match the between the CPU's it may render the new CPU useless. Forewarn any engineer who decides to do this. He may need another spare CPU module.

**NEVER Allow a customer to use this procedure!**

**NOTE:** Updating Firmware - Off existing CPU (**BEWARE - may render CPU's unusable**)

- a. Get settings of the following  
    Bootdef\_dev  
    Boot\_osflags  
    Auto\_action
- b. P00>>> **set CPU #** , where # is the number of the CPU to update from.
- c. P00>>> **update -fl KN7aa#** , where # is CPU to update
- d. P00>>> **update -ee KN7aa#** , where # is CPU to update
- e. P00>>> **set eeprom serial** and environmental variables.  
    can also use **set eeprom manufacturing**



## VAX 7000/10000

The console firmware on the VAX 7000/10000 systems is located on the CPU module. All Cpu's must run the same version of firmware. You can **NOT** have mixed versions and expect it to work. Any time a CPU module is added or replaced, the firmware will most likely need to be upgraded. You will also need to do occasional console firmware upgrades to load the latest version of firmware that is available.

There are several ways to upgrade the firmware. All involve booting Loadable Firmware Utility (LFU). It can be booted one of the following ways.

- Off the VAX 7000/10000 Console CD using a local CDROM.
- Over the network using the firmware.sys file.
- Off of an infoservert using the VAX 7000/10000 Console CD.
- Off of a disk that has a bootable version of the firmware file (filename.exe) on it (MCR WRITEBOOT may be required on that file to make it bootable).

The procedure to update the console firmware is as follows.

- Determine current console firmware revision.
  - Record all console environmental variables by typing SHOW \* at the >>>.
  - Determine which method and firmware version will be used to do the update.
  - Print the firmware release notes for that version and system.
  - Determine if any option firmware will be upgraded.
  - Locate the appropriate RCU and ECU diskettes if required.
  - Boot the firmware file (LFU).
  - Use the verify and update commands at the function? prompt.
  - When done exit from LFU.
  - Execute a Build NVR and a Build EEPROM at the >>> for each CPU.
  - Init the machine and reboot.
1. First type INIT at the >>> to see what the current version of console loaded is. It is at the very bottom of the configuration map.

```
>>> init
F E D C B A 9 8 7 6 5 4 3 2 1 0 NODE #
 A M P TYP
 O + + ST1
 B BPD
 O + + ST2
 B BPD
 + + + ST3
 B BPD

 + . + . + . + + C0 XMI +
 C1
 C2
 C3

 . A0 ILV
 . 128 128MB
```

Firmware Rev = V4.0-4589      SROM Rev = V3.0-0      SYS SN = GA24627371

2. >>> **show \*** to printout all the environmental variables. Check all customer set variables. Also verify the setting of the following variables.

```
Bootdef dev
Boot_osflag
Auto_action
```

3. Boot the firmware using one of the following methods.

### Method 1 - Booting Off a Local CDROM

Typically this procedure isn't available since most VAX7000's don't have a local CD.

- a. Insert the VAX 7000/10000 Console CD in the local CDROM drive.
- b. >>> **boot -fl 0,0,0 -fi vax7000\_v0c DKA600**

Function? See below for update steps

### Method 2 - Booting Over the Network

- a. Copy the firmware.sys file to MOM\$LOAD of an existing node in the cluster
- b. Set the attributes on the file with the following commands:  
\$ **set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) vax7000\_v0c.sys**
- c. Enable service on that node from NCP

\$ **MC NCP**

MC NCP> **Show Known Circuit Characteristic**

Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41

Circuit = BNA-0

|                         |                                              |
|-------------------------|----------------------------------------------|
| State                   | = on                                         |
| Service                 | = disabled (if enabled skip to boot command) |
| Counter timer           | = 65534                                      |
| Designated router       | = 28.1023 (CX028A)                           |
| Cost                    | = 4                                          |
| Maximum routers allowed | = 33                                         |
| Router priority         | = 64                                         |
| Hello timer             | = 15                                         |
| Type                    | = Ethernet                                   |
| Adjacent node           | = 28.1023 (CX028A)                           |
| Listen timer            | = 30                                         |

NCP> **Set Circ BNA-0 State OFF - This step will stop network activity**

NCP> **Set Circ BNA-0 Service Enable**

NCP> **Set Circ BNA-0 State ON**

- d. >>> **boot -fl 0,0,0 EXA0 -fi vax7000\_v0c**  
(Leave off .SYS or node that services request will get an error- **BAD MOP FID**)

Function? See below for update steps

DEMNA = EXA0 / DEMFA = FXA0 - Determine device name with SHOW DEVICE at >>>

### Method 3 - Boot the Console CD Off of an Infoservert

- a. Insert CD in the Infoservert
- b. >>> **boot -flags 0,0,0 exa0 -file ISL\_LVAX\_V07**  
(the filename **must** be uppercase and changes with different console CD's)
- c. After INIT map will give you infoservert menus

| FUNCTION<br>ID |   | FUNCTION       |
|----------------|---|----------------|
| 1              | - | Display Menu   |
| 2              | - | Help           |
| 3              | - | Choose Service |
| 4              | - | Select Options |

```

5 - Stop

Enter a function ID value: 3 - for Choose Service

OPTION OPTION
ID
1 - Find Services
2 - Enter known Service Name

Enter an Option ID value: 1 - for Find Service

Working

Servers found:: 1

Service Name Format:
 Service Number
 Service Name
 Server Name
 Ethernet ID

#1
SMC
P9_ESS
08-00-2B-24-72-6B

#2
6000_DIAG_H
P9_ESS
08-00-2B-24-72-6B

#3
VAX7000_V0C
P9_ESS
08-00-2B-24-72-6B

Enter a Service Number or <CR> for more: 3 = VAX7000_V0C firmware

Copyright Digital Equipment Corporation
 1991, 1993, 1994, 1995
 All Rights Reserved.

Loadable Environment Rev: V4.3-4842 Sep 12 1996 10:16:10

***** Loadable Firmware Update Utility *****
Version 13.0 17-Oct-1995

Function?

```

#### **Method 4 - Boot Off of a Disk - Non-System Disk and System Disk Using OpenVMS**

##### **Non-System Disk**

- a. Locate the VAX7000\_V0C.EXE file
- b. \$ **copy/contiguous vax7000\_v0c.exe** file to a current non-bootable disk.
- c. Use writeboot to make the disk bootable. Specify the disk, directory and filename of the firmware. Take the defaults for the other questions.

##### **\$ MCR Writeboot**

```

Target system device (and boot file if not VMB.EXE):1dua5:[TEMP]vax7000_v0c.exe
Enter VBN of boot file code (default is 1) : <CR> for default
Enter load address of primary bootstrap in HEX (default is 200): <CR>
d. >>> b -f1 0,0,0 dua5

```

## System Disk

- a. Only steps a and b above are used. Do NOT execute writeboot step c.
- b. Specify the flags of 0,0,100 and use "system disk":[sys0.sysexec]filename for the bootfile.  
    >>> **b -fl 0,0,100 dua0**  
    bootfile> **dua0:[sys0.sysexec]vax7000\_v0c.exe**

### 4. Update the firmware at the Function? prompt.

- a. Function? **update all** or **update KA7AA**, **update CIXCD0** etc.
- b. Function? **exit**
- c. >>> **build nvr**
- d. >>> **build eeprom**  
    Create new EEPROM image [Y/(N)]? **y**
- e. >>> **set CPU #** - where # are the other CPU numbers.  
    Repeat steps c. and d. for each CPU.
- f. If you get the following message do a SET CONFIG at the >>>.  
  
    System configuration has changed since last saved configuration!  
    >>> **set config** - clears above error message
- g. >>> **set Bootdef\_dev**  
    **set Boot\_osflags**  
    **set Auto\_action**
- h. >>> **build seeprom** - initializes the SEEPROM for the DWLAA, DWLMA, IOP, MS7AA and MS7CC modules.
- i. >>> **init**

### 5. The environment variable COMPAT\_MODE was implemented in Version 4.2 of the VAX7000/10000 console to allow running VAX VMS Version 5.5-2 on the VAX7000/10000 Model 800 CPU. COMPAT\_MODE has three states which should be used as follows:

- ON (default) - for use with VAX VMS V6.1, V6.2, V7.0 on all CPUs
- OFF - for use with future releases of VAX VMS
- V55 - for use with VAX VMS V5.5-2 on the Model 800 CPU

The Model 600 fully supports VAX VMS V5.5-2, V6.1, V6.2, and V7.0 regardless of the setting of COMPAT\_MODE.

With COMPAT\_MODE set to ON (default) the Model 700 supports running VAX VMS V6.1, V6.2 and V7.0. This CPU does not support running VAX VMS V5.5-2.

With COMPAT\_MODE set to ON (default) the Model 800 supports running VAX VMS V6.1, V6.2, and V7.0. These versions of the operating system will see the CPU as a Model 700. With COMPAT\_MODE set to V55, VAX VMS V5.5-2 is supported on the Model 800, but the operating system will see the CPU as a Model 600 and all restrictions pertaining to running VAX VMS V5.5-2 on a Model 600 CPU will apply (i.e., 512Mb memory limit, no BI support, etc.).

There is one other **UNRECOMMENDED** method for updating firmware from an existing CPU's EEPROM. That is the use of the UPDATE command to copy one CPU's EEPROM info to another CPU's EEPROM area. The problem with this command is if the EEPROM format does not match the between the CPU's it may render the new CPU useless. Forewarn any engineer who decides to do this. He may need another spare CPU module.

**NEVER Allow a customer to use this procedure!**

NOTE: Updating Firmware - Off existing CPU (**BEWARE - may render CPU's unusable**)

- a. Get settings of the following  
Bootdef\_dev  
Boot\_osflags  
Auto\_action
- b. >>> **set CPU #** , where # is the number of the CPU to update from.
- c. >>> **update -fl KA7aa#** , where # is CPU to update
- d. >>> **update -ee KA7aa#** , where # is CPU to update
- e. >>> **set eeprom serial** or **set eeprom manufacturing**
- f. Set environmental variables  
>>> **set Bootdef\_dev**  
>>> **set Boot\_osflags**  
>>> **set Auto\_action**





# **Alpha Firmware Issues**



## **A Description of HALcode and PALcode**

### **What is HALcode**

The Windows NT hardware abstraction layer (HAL) refers to a layer of software that deals directly with your computer hardware. Because the HAL operates at a level between the hardware and the Windows NT executive services, applications and device drivers need not be aware of any hardware-specific information. The HAL provides routines that enable a single device driver to support a device on different hardware platforms, making device driver development much easier. It hides hardware dependent details such as I/O interfaces, interrupt controllers, and multiprocessor communication mechanisms. Applications and device drivers are no longer allowed to deal with hardware directly and must make calls to HAL routines to determine hardware specific information. Thus, through the filter provided by the HAL, different hardware configurations can be accessed in the same manner.

Reference(s) :

Microsoft Windows NT "Resource Guide"

### **What is PALcode**

Privileged Architecture Library (PALcode) is a set of subroutines that are specific to a particular Alpha AXP operating system implementation. These subroutines provide operating system primitives for context switching, interrupts, exceptions and memory management. Similar to BIOS in pc's. Pal Subroutines are invoked by implementation hardware or by software CALL\_PAL instructions.



## **Generic Powerup Sequence to Load Console Firmware**

This is a generic procedure describing the power on initialization and firmware code load on the Alpha CPU's. The exact specifics vary from machine to machine. Check CPU specific manuals for exact sequence. However most will follow this routine. Failure during these routines will cause beep-codes, OCP error displays, console error displays, no display or hangs.

### **Terms**

SROM - Serial ROM - Located on CPU . Starts initialization routine.  
FPROM - Flash Programable ROM  
FEPROM - Flash Eraseable Programable ROM  
DROM - Diagnostic Rom  
XSROM - Extended SROM  
EEPROM - Electrically Eraseable Programable ROM  
NVRAM - Non-Volatile RAM  
SRM - Alpha System Reference Manual console image  
ARC - Alpha Advanced RISC Computing console image  
AlphaBIOS - Alpha Basic Input/Output System  
FSL - Fail Safe Loader  
PALcode - Alpha AXP Privileged Architecture Library code  
HALcode - Hardware Abstraction Layer

During power up or init the processor performs diagnostics to verify system operation, load system console code, test the CORE system ( CPU, mem, system board) including all boot path devices.

1. SROM code loaded into CPU I-cache
2. SROM code does the following
  - a. Inits EV4 / EV5 CPU (including cache)
  - b. Tests system bus interface.
  - c. Tests PCI or EISA bridges
  - d. Test onboard SCSI
  - e. Size, configure, test and init a small portion of memory to load console Code into.
  - f. Test path to FPROM, FEPROM, XSROM, DROM depending on system
  - g. Load console code from the area to memory.
  - h. Checksum the console code to verify its integrity.
  - i. If checksum OK, pass control to console code.(SRM or ARC/AlphaBIOS console loaded depending on OS\_TYPE Value)
3. Console code is started and performs the following.
  - a. Perform complete check of system memory.  
Steps b thru d may be completed in parallel.
  - b. Start the I/O drivers for mass storage disks and tapes. A complete check of the machine is made. After I/O drivers are started, the console program continuously polls the bus for devices (about every 20-30 sec)
  - c. Check if EISA config info is present in NVRAM for each module detected.
  - d. Run disk exercisers on devices seen.
  - e. Enter console mode or boot operating system based on environmental variables Auto\_Action and OS\_Type. If OS\_TYPE = NT will load ARC or AlphaBIOS.

SRM Console Consists of the following

- A Kernel
- Console Terminal Drivers
- Console Boot Drivers
- Various Port Drivers
- Alpha SRM Compliant Console Functionality
- Minimal Power Up Selftest
- X86 Emulator



## Definitions of Environmental Variables

The following are some of the environmental variable you will need to be concerned with. Some will not be available on every machine. You can view variables at the console by typing

- **Show \*** (to see all variables)
- **Show b\*** (to see all variables starting with the letter b)
- **Show variable** (must spell out variable if you do not use wildcards (\*))

From VMS you can see some variable using the following DCL command.

- **write sys\$output f\$getenv("auto\_action")**  
**HALT**
- **\$ write sys\$output f\$getenv("bootdef\_dev")**  
**scsi 0 5 0 5 500 ef00 10201077**

On this system bootdef\_dev was set to dkd500.5.0.5.0  
The device numbers are printed backwards 0 5 0 5 500  
The 10201077 is the type field for the ISP1020.

From UNIX V4.0D or greater, you can use the consvar command to list, get and set variables

- **consvar -s bootdef\_dev dsk0**                      Sets bootdef\_dev to dka0
- **consvar -l**                                        Lists console variables  
auto\_action = HALT  
boot\_dev = dsk3  
bootdef\_dev = dsk3  
booted\_dev = dsk3  
boot\_file =  
booted\_file =  
boot\_osflags = A  
booted\_osflags = A  
boot\_reset = ON  
dump\_dev =  
enable\_audit = ON  
license = MU  
char\_set =  
language = 0x36  
tty\_dev = 0  
com1\_baud = 9600  
com1\_modem = OFF  
com1\_flow = SOFTWARE  
com2\_baud = 9600  
com2\_modem = OFF  
com2\_flow = SOFTWARE  
secure = off  
logfail = 0  
srm2dev\_id =
- **consvar -g variable**                              Get the setting of a console variable

**arc\_enable**                      Enables the console ARC interface, allowing booting of the ECU and other ARC utilities. Default value is **off**.

**auto\_action**                    The action the console should take following an error halt, power cycle, or system reset  
**BOOT**                      Attempt bootstrap  
**HALT**                      Halt, enter console I/O mode.  
**RESTART**                  Attempt restart. If restart fails then try boot.

**baud**                            Sets the console terminal baud rate.

**boot\_dev**                        The device or device list from which booting is attempted.



This variable may be a boot search list. The console derives the value from the `boot` command if a device or string is specified, otherwise from the `bootdef_dev` variable. The value is preserved across warm bootstraps.

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>boot_file</b>           | The default file name used for the primary bootstrap when no file name is specified in the boot command<br>example: 1/boot/vmlinuz-2.2.5-16 (linux)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>boot_osflags</b>        | Default additional parameters to be passed to the software during boot if none are specified in the boot command.<br><b>OpenVMS Alpha</b><br>root, additional flags (R5) (0,0)<br><b>OpenVMS VAX</b><br>R3,root,R5 (0,0,0)<br>R3 is used for Phase 1 System disk shadowsets.<br><b>TRU64 UNIX or Digital UNIX</b><br><b>a</b> Autoboot. Boots /vmunix and goes to multi-user mode. Use this for a system that should come up automatically after a power failure.<br><b>s</b> Single-User. Boots /vmunix to single-user mode and stops at the # (root) prompt.<br><b>i</b> Interactive. Request the name of the image to boot from the specified boot device<br><b>D</b> Full dump, implies "s" as well. By default, if UNIX panics it completes a partial memory dump. Specifying "D" forces a full dump at system panic. |
| <b>boot_reset</b>          | Indicates whether a full system reset is performed in response to an error halt or BOOT command<br><b>OFF</b> warm boot, no full reset is performed (default)<br><b>ON</b> cold boot, a full reset is performed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>bootdef_dev</b>         | The device or device list from which a boot is to attempted when no path is specified on the command line<br>example: dra0.0.0.7.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>booted_dev</b>          | The device from which booting actually occurred. (Read-only)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>booted_file</b>         | The file name used for the primary bootstrap during the last boot. The value is NULL if <code>boot_file</code> is NULL and no bootstrap file name was specified by the boot command.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>booted_osflags</b>      | Additional parameters, if any, specified by the last boot command that are to be interpreted by system software.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>bus_probe_algorithm</b> | Defines which algorithm to use for probing the PCI bus, and naming detected devices. Must be set to NEW when running OpenVMS V6.2 or later, or Digital Unix V3.0b or later.<br><b>NEW</b> (Default) Example dra0.0.0.1007.1<br><b>OLD</b> dra0.0.0.7.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>console</b>             | Specifies the default device for console input and output.<br><b>GRAPHICS</b> Specifies the VGA and Keyboard.<br><b>SERIAL</b> Specifies the terminal attached to COM1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>console_mode</b>        | Defines the MODE after INIT. Used on AlphaServer 8x00 and Compaq AlphaServer GS60 /GS140).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

**BASIC** Normal operating mode  
**DIAG** Used when running console diagnostics  
**ADVANCED** Used when running utilities

**cpu\_enabled** A bitmask indicating which processors are enabled to run (leave console mode). If this variable is not defined, all available processors are considered enabled.

**cpu\_mask** A bitmask indicating which processors are enabled to run (leave console mode).

**cpu\_primary** A bitmask indicating which processors are eligible to be the next boot processor, following the next reset.

**dump\_dev** The complete device specification of the device or device list to which operating system dumps should be written.

**ew\*0\_mode** Specifies the value for the Ethernet port mode when it is started. Allowed values are:  
**Auto-Sensing**  
**AUI**  
**Fast**  
**Twisted-Pair**  
**Full Duplex, Twisted-Pair**  
**BNC**  
**FastFD (Full Duplex)**  
**Auto-Negotiate**

**ew\*0\_protocols** Determines which network protocols are enabled for booting and other functions.  
**mop** Sets the network protocol to mop: the setting typically used for systems using the OpenVMS operating system.  
**bootp** Sets the network protocol to bootp: the setting typically used for systems using the DEC OSF/1 operating system.  
**bootp,mop** When the settings are used in a list, the mop protocol is attempted first, followed by bootp.

**ffauto** Allows booting from a disk that is in the "Not Connected" State. FFAUTO determines console behavior when the system is trying to autoboot. An autoboot is any boot other than a manual >>>**boot** command issued at the SRM console by a user. FFAUTO is stored in non-volatile memory therefore its state persists across system resets and power cycles.  
**ON** Console behavior is affected during an autoboot. When the console is trying to autoboot, the console attempts to boot from each "connected" device listed in bootdef\_dev. If the console reaches the end of the bootdef\_dev list without successfully booting, the console goes to the beginning of the bootdef\_dev list and attempts booting again. Disks that are found in the "not connected" state are changed to the "connected state", thereby enabling the console to access that device.  
**OFF** The default. Console behavior is not affected.

|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ffnext</b>                                    | <p>Allows booting from a disk that is in the "Not Connected" State. FFNEXT determines the console behavior of the next command issued to a "not connected" device. FFNEXT is a volatile environment variable and its value is temporary therefore does not propagate across a system reset or reboot.</p> <p><b>ON</b> The console will change the next "not connected" device to a "connected" state for booting. In the ON-state, The FFNEXT state is automatically reset to OFF after the console changes device state from "not connected" to "connected". Resetting FFNEXT to OFF protects the user from accidentally changing the state of disks. Stated in another way, FFNEXT is a one shot. It stays in effect until a "Not Connected" device is accessed.</p> <p><b>OFF</b> The default. Console behavior is not affected.</p> |
| <b>interleave</b>                                | <p>Determines memory interleave specification.</p> <p><b>DEFAULT</b> Memory configuration algorithm that attempts to maximize memory interleaving is used</p> <p><b>NONE</b> No interleave</p> <p><b>Explicit interleave list</b> (example SET INTERLEAVE 7+5:6)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>isp*_host_id</b>                              | <p>Specifies the host ID of the KFTIA SCSI adapters. Valid values are 0 to 7, the default is 7.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>isp*_soft_term</b>                            | <p>Enables or disables SCSI terminators. This environment variable applies to Turbolasers using the KFTIA Qlogic ISP1020 SCSI controller. There are four possible values:</p> <p><b>off</b> Turns off both low 8 bits and high 8 bits.</p> <p><b>low</b> Turns on low 8 bits and turns off high 8 bits.</p> <p><b>high</b> Turns on high 8 bits and turns off low 8 bits.</p> <p><b>on</b> Turns on both low 8 bits and high 8 bits.</p>                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>kzpsa*_fast</b>                               | <p>Specifies the mode of the onboard SCSI adapter.</p> <p><b>0</b> Normal SCSI mode.</p> <p><b>1</b> Fast SCSI mode.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>kzpsa*_host_id</b>                            | <p>Specifies the host ID of the KZPSA SCSI adapter. Valid values are 0 to 7, the default is 7.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>kzpsa*_termpwr</b>                            | <p>KZPSA SCSI termination power setting</p> <p><b>0</b> disable termpwr</p> <p><b>1</b> enable termpwr</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>memory_test</b>                               | <p>Specifies the amount of memory tested during power-on self test on the Alphaserver 4x00 and 1200 systems.</p> <p><b>full</b> (default) - test all memory<br/>If running OpenVMS, Tru64 UNIX or Digital UNIX set it to default.</p> <p><b>partial</b> - test only the first 64MB of memory</p> <p><b>none</b> - test no memory</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>N1</b><br><b>N2</b><br><b>N3</b><br><b>N4</b> | <p>These four variables are set by using the wwidmgr -quicket or -set port commands. These commands will define an alias for a HSG80 port that a user wants devices to be seen on.</p> <p>In order for the device to be available at the console it must have a port configured using the wwidmgr command. The wwid0 thru wwid3 variables are also used with these variables to define devices seen on the HSG80 ports.</p>                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>ocp_text</b>                                  | <p>Text string to be displayed in the OCP after power up</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>os_type</b>         | Specifies the OS that will be booted on the machine <ul style="list-style-type: none"> <li><b>NT</b> On reset, control is passed to ARC Firmware/AlphaBios.</li> <li><b>VMS</b> Same as "OpenVMS".</li> <li><b>OpenVMS</b> The default for most Alpha platforms. The only setting for which the firmware CIPCA driver will be started.</li> <li><b>OSF</b> Same as "Unix".</li> <li><b>Unix</b> The default for Alpha evaluation board products.</li> </ul>                                                                                                                                                                                                                                           |
| <b>pal</b>             | Specifies the versions of OpenVMS and Digital Unix PALcode available in the firmware. The generic major and minor PALcode revisions are displayed along with the platform-specific variation. For example: OpenVMS PALcode V1.19-4, Digital UNIX PALcode V1.21-16                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>pci_parity</b>      | Disables or enables parity checking on the PCI bus. <ul style="list-style-type: none"> <li><b>ON</b> Enables parity checking for all devices on the PCI.</li> <li><b>OFF</b> Disables parity checking for all devices on the PCI.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>pk*0_disconnect</b> | Allows the target to disconnect from the SCSI bus while the target acts on a command. <ul style="list-style-type: none"> <li><b>1</b> target is allowed to disconnect from the SCSI bus while processing a command.</li> <li><b>0</b> target retains control of the SCSI bus while acting on a command.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>pk*0_fast</b>       | Specifies the mode of the onboard SCSI adapter. <ul style="list-style-type: none"> <li><b>0</b> Normal SCSI mode.</li> <li><b>1</b> Fast SCSI mode.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>pk*0_host_id</b>    | Specifies the host ID of the onboard SCSI adapter. Valid values are 0 to 7, the default is 7.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>pk*0_soft_term</b>  | Enables or disables SCSI terminators. This environment variable applies to systems using the QLogic ISP1020 SCSI controller. The QLogic ISP1020 SCSI controller implements the 16-bit wide SCSI bus. The QLogic module has two terminators, one for the 8 low bits and one for the high 8 bits. There are five possible values: <ul style="list-style-type: none"> <li><b>off</b> Turns off both low 8 bits and high 8 bits.</li> <li><b>low</b> Turns on low 8 bits and turns off high 8 bits.</li> <li><b>high</b> Turns on high 8 bits and turns off low 8 bits.</li> <li><b>on</b> Turns on both low 8 bits and high 8 bits.</li> <li><b>diff</b> Places the bus in differential mode.</li> </ul> |
| <b>pk*0_termplr</b>    | KZPSA SCSI termination power setting <ul style="list-style-type: none"> <li><b>0</b> disable termpwr</li> <li><b>1</b> enable termpwr</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>simm_callout</b>                                          | AlphaServer 8x00 and Compaq AlphaServer GS60/GS140 only; specifies that if any memory errors are detected during power-on self-test, the console should identify the failing SIMM. Defined values are:<br><b>OFF</b> (Default)<br><b>ON</b> identify failing SIMM. The "ON" value is pre-served across one system initialization only, then reset to "OFF".                                                              |
| <b>sys_model_num</b>                                         | FIS process writes a model number to this variable.                                                                                                                                                                                                                                                                                                                                                                      |
| <b>sys_serial_num</b>                                        | FIS process writes a system serial number to this variable.                                                                                                                                                                                                                                                                                                                                                              |
| <b>sys_type</b>                                              | FIS process writes a system type to this variable (AlphaServer 4x00/1200 only). Defined values are:<br><b>Pedestal</b><br><b>Rackmount</b>                                                                                                                                                                                                                                                                               |
| <b>tta0_baud</b>                                             | Sets the console terminal port baud rate.                                                                                                                                                                                                                                                                                                                                                                                |
| <b>version</b>                                               | Specifies the version of the console code in the firmware. For instance, V3.5-26 MAR 31 1994 12:01:55.                                                                                                                                                                                                                                                                                                                   |
| <b>wwid0</b><br><b>wwid1</b><br><b>wwid2</b><br><b>wwid3</b> | These four variables are set by using the <code>wwidmgr -quicket</code> or <code>-set wwid</code> commands. These commands will define an alias for a device connected to a KGPSA/HSG80. In order for the device to be available at the console it must be configured using the <code>wwidmgr</code> command. The N1 thru N4 variables are also used with these variables to define HSG80 ports the devices are seen on. |

## Definition of Galaxy Environmental Variables

The following environmental variables are required for Galaxy setup. The values are dependent upon the system type and configuration. See the Compaq OpenVMS Alpha Galaxy Guide (AA-REZQB-TE) or STARS for further information on setup. These are used for OpenVMS. UNIX only uses these parameters on the AlphaServer 8200/8400 and AlphaServer GS60/GS140 machines.

|                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>lp_count</b>                                            | <p>The number of Galaxy partitions or instances the console should expect.</p> <p><b>0</b> - Galaxy console is OFF. Will boot traditional SMP configuration only.</p> <p><b>non-zero</b> - The exact value represents the number of Galaxy partitions the console should expect.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>lp_cpu_mask*</b>                                        | <p>A bit mask that indicates which CPUs are initially assigned to the specified Galaxy partition or instance number.</p> <p>Requirements for this variable are as follows</p> <ul style="list-style-type: none"><li>• AlphaServer 8x00/GS Series machines<ul style="list-style-type: none"><li>• Each instance must have an even numbered CPU as primary</li></ul></li><li>• AlphaServer ES40 and 4100<ul style="list-style-type: none"><li>• CPU0 must be a part of partition 0</li><li>• CPU1 must be a part of partition 1</li></ul></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>lp_io_mask*</b>                                         | <p>Assigns I/O modules by slot number to each partition or instance.</p> <p><b>100</b> - Represents I/O module in slot 8<br/><b>80</b> - Represents I/O module in slot 7<br/><b>40</b> - Represents I/O module in slot 6<br/><b>20</b> - Represents 4100 IOD1<br/><b>10</b> - Represents 4100 IOD0<br/><b>2</b> - Represents ES40 PCI1<br/><b>1</b> - Represents ES40 PCI0</p> <p>AlphaServer 8400 - only valid values are 100, 80 and 40<br/>AlphaServer 8200 - only valid values are 100 and 80<br/>AlphaServer 4100 - only valid values are 10 and 20<br/>AlphaServer ES00 - only valid values are 1 and 2</p> <p>Standards for this variable are as follows</p> <ul style="list-style-type: none"><li>• AlphaServer 8x00/GS Series machines<ul style="list-style-type: none"><li>• IO module installed in slot 8 is assigned instance 0</li><li>• IO module installed in slot 7 is assigned instance 1</li><li>• IO module installed in slot 6 is assigned instance 2</li></ul></li><li>• AlphaServer ES40 and 4100<ul style="list-style-type: none"><li>• IOD0 or PCI0 is assigned to instance 0</li><li>• IOD1 or PCI1 is assigned to instance 1</li></ul></li></ul> |
| <b>lp_mem_mode</b>                                         | <p>Used by Tru64 UNIX on Turbolaser and GS60/GS140 only. Tells console to load into each partition Also needs to set interleave to none.</p> <p><b>isolate</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>lp_mem_size *</b>                                       | <p>Allocates a specified amount of private memory for the specified instance or partition.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>lp_shared_mem_size</b>                                  | <p>Allocates memory for use as shared memory. Must be assigned in multiples of 8MB and are expressed in HEX bytes.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>lp_error_target</b>                                     | <p>Defines which instance's primary CPU will</p> <ul style="list-style-type: none"><li>• Get error information from the console</li><li>• Create an entry in it's errorlog</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p>* = partition, instance number or amount of memory.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |



## How to Set Customer Defined Environmental Variables

Customers can define site-specific console environmental variables for specialized booting. Originally you could create non-volatile variables with **CREATE -NV** commands that would hold variable contents over re-inits. This procedure does not appear to work. After setting the variables they clear on init.

In order to set customer defined variables that will hold after an init you must define them in a power-up script so they are redefined on each init.

In order to use them in a boot string you must precede them with a \$ .

i.e. >>> Boot \$vms will use the contents of the variable VMS to boot.

If you do not use the \$ in front of the variable you will see the following error

```
could not find controller for device vms
device vms is invalid
usage is boot <device> [-file <file>] [-flags <flags>]
```

### **Procedure:**

1. Edit the powerup script by typing " edit nvram "
2. Enter a line number followed by the command
3. Exit the edit session
4. Reinit.
5. Cat nvram to see contents on powerup script
6. If this is a boot string you must precede the variable with a \$ for it to work.

```
>>> Boot $vms
```

### **Example:**

```
P00>>> edit nvram
editing 'nvram'
0 bytes read in
*10 set vms "-fl 0,0 dkb100.1.0.2000.1" (enter line number " 10 " and command)
*20
*exit
```

```
P00>>>cat nvram
set vms "-fl 0,0 dkb100.1.0.2000.1"
```

```
P00>>>init
```

```
init map prints
```

```
.
.
.
environment variable vms created
AlphaServer 4100 Console V5.1-3, 4-FEB-1998 16:40:08
```

```
P00>>>sho vms Show the variable you created
vms -fl 0,0 dkb100.1.0.2000.1
```

```
P00>>>boot $vms Issue boot $vms note it now works
Initializing...
.
.
.
Open VMS or Tru64 UNIX banner
```





## How to Set Customer Defined Environmental Variables on a TurboLaser

In order to set customer defined environmental variables on an AlphaServer 8200 or 8400 you will need to use one of the following procedures.

1. Create conv -nv and then set the value of the variable.
  - a. P00>>> **Create -nv conv**
  - b. P00>>> **Set conv dkb0.0.0.0.0 -fl 0,1** (note flags is passed second)
2. Can do command on one line.
  - a. P00>>> **Create -nv conv dkb0.0.0.0.0 -fl 0,1**
3. Create a powerup script
  - a. P00>>> **set mode advanced**
  - b. P00>>> **edit ee\_power**  
\*10 **set conv "dkb0.0.0.0.0 -fl 0,1"**  
\*20  
\*^z or **exit**
  - c. P00>>> **set eeeprom script power**
  - d. Power off/on machine. The variable will now load on every power off/on.
4. In order to use the new variable type the following  
P00>>> **boot \$conv** note the \$ before the variable you defined.



## Description of the Environmental Variable Bus\_Probe\_Algorithm

The Environmental variable `bus_probe_algorithm` changes the algorithm we use to probe buses.

`Bus_probe_algorithm` must be set to **NEW** for the following operating systems.

- **OpenVMS V6.2 or greater**
- **Digital Unix V3.0B or greater.**

OpenVMS will crash with an INCONSTATE bugcheck on boot if not set correctly  
Digital UNIX will halt on boot.

When probing the PCI bus, if we find a PCI-to-EISA bridge it can either treat this new EISA bus as a child bus of the PCI (just like I do when I find a PCI-to-PCI bridge), or it can treat it as a peer bus to the PCI.

When it treats it as a child bus, it gets a sub-PCI bus number just like other sub-PCI buses. It would be hose 0 (the main PCI bus), bus 1.

When it treats it as a peer bus, it gets a hose number just like the main PCI bus. It would be hose 1.

`bus_probe_algorithm` determines which of the above options we select. **"new"** selects the more correct option; **"old"** selects the option used when the console was first written. Given the above, only EISA devices will see their names change.

With `BUS_PROBE_ALGORITHM = "OLD"` --> dra0.0.0.7.1  
With `BUS_PROBE_ALGORITHM = "NEW"` --> dra0.0.0.1007.1

These devices are on a KFESA which is an EISA device. However PCI devices will not reflect this change



## Using FFNEXT and FFAUTO Environmental Variables

This section describes how to use console environment variables FFAUTO and FFNEXT to force devices (e.g. disks) from a "not connected" state to a "connected" state to make them bootable. The console does not allow booting devices that are in the "not connected" state.

FFAUTO and FFNEXT are used for situations and configurations where an operator needs to force the console to boot a "not connected" device. These console environment variables were introduced in console firmware V5.5 (August 1999).

### Background of Device States

#### Behavior of "Not Connected" Devices

HSZ8x disk array controllers or HSG8x array controllers may have their disks in a "connected" or "not connected" state. In MULTIBUS mode, a disk state of "not connected" is normal and correct. Because the console does not allow booting devices in the "not connected" state, attempted to boot a "not connected" disk produces the console error message below:

```
P00>>>b dga40.1003
resetting all I/O buses
VGA Bios failed, status = 1
/boot dga40.1003.0.6.0 -flags 0)
dga40.1003.0.6.0 is not connected
failed to open dga40.1003.0.6.0
```

Therefore, to successfully boot a disk, select either a "connected" disk or use the FFAUTO or FFNEXT command.

#### Determining a "Not Connected" Device from an HSZ80 or HSG80

The HSZ8x or HSG8x console can help the operator determine where a disk device is connected. In this HSG80 console example below, the state of disk device d40 is 'ONLINE to this controller' therefore connected.

```
HSG80> show d40
 LUN Uses Used by

D40 DISK50000
 LUN ID: 6000-1FE1-0000-04A0-FFFF-FFFE-0005-0000
 IDENTIFIER = 40
 Switches:
 RUN NOWRITE_PROTECT READ_CACHE
 READAHEAD_CACHE
 MAXIMUM_CACHED_TRANSFER_SIZE = 32
 Access:
 ALL
 State:
 ONLINE to this controller
 Not reserved
 NOPREFERRED_PATH
 Size: 4110480 blocks
 Geometry (C/H/S): (3045 / 16 / 85)
```

#### Determining a "Not Connected" Device from the SRM Console

There are a couple of methods:

1. The console error message at boot time, as previously shown, is one way to determine a "Not Connected" device. This console error message is also displayed when a console disk exerciser attempts to exercise a "Not Connected" device.
2. Using the WWIDMGR command, the console can also display the status of fibre channel devices controlled by an HSG8x.

```
P00>>>wwidmgr -show wwid -udid 40 -full
```

```
[0] UDID:40 WWID:01000010:6000-1fe1-0000-04a0-ffff-fffe-0005-0000 (ev:wwid0)
 current_unit:40 current_col: 1 default_unit: 5901
 via adapter via fc nport Con DID Lun
 pga0.0.0.6.0 5000-1fe1-0000-04a2 Yes 210313 40
 pga0.0.0.6.0 5000-1fe1-0000-04a1 Yes 210513 40
 pga0.0.0.6.0 5000-1fe1-0000-04a4 No 210713 40
```

### **Forcing the Console to Use a "Not Connected" Device**

#### **Using FFAUTO to Autoboot a "Not Connected" Devices**

FFAUTO determines console behavior when the system is trying to autoboot. An autoboot is any boot other than a manual >>>boot command issued at the SRM console by a user. FFAUTO can be set to ON or OFF. The default state is OFF where console behavior is not affected. FFAUTO is stored in non-volatile memory therefore its state persists across system resets and power cycles.

```
>>> set FFAUTO ON
```

In the ON state, console behavior is affected during an autoboot. When the console is trying to autoboot, the console attempts to boot from each "connected" device listed in bootdef\_dev. If the console reaches the end of the bootdef\_dev list without successfully booting, the console goes to the beginning of the bootdef\_dev list and attempts booting again. Disks that are found in the "not connected" state are changed to the "connected state", thereby enabling the console to access that device.

#### 4.2.1.1 Example Using the FFAUTO Environment Variable

```
P00>>>set FFAUTO ON
P00>>>set bootdef_dev dga40.1003
P00>>>b
 (boot dga40.1003.0.6.0 -flags 0)
dga40.1003.0.6.0 is not connected
failed to open dga40.1003.0.6.0
P00>>>init
```

```
VMS PALcode V5.56-7, OSF PALcode V1.45-12
starting console on CPU 0
CPU 0 booting
```

```
(boot dga40.1003.0.6.0 -flags 0)
dga40.1003.0.6.0 is not connected
failed to open dga40.1003.0.6.0
```

```
Retrying, type ^C to abort...
```

```
(boot dga40.1003.0.6.0 -flags 0)
block 0 of dga40.1003.0.6.0 is a valid boot block
reading 896 blocks from dga40.1003.0.6.0
bootstrap code read in
base = 200000, image_start = 0, image_bytes = 70000
initializing HWRPB at 2000
initializing page table at 1ff0000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code
```

## Using FFNEXT on "Not Connected" Devices

FFNEXT determines the console behavior of the next command issued to a "not connected" device. FFNEXT can be set to either OFF or ON. The default-state is OFF where console behavior is not affected. FFNEXT is a volatile environment variable and its value is temporary therefore does not propagate across a system reset or reboot.

```
>>> set FFNEXT ON
```

In the ON-state, the console will change the next "not connected" device to a "connected" state for booting. The FFNEXT state is automatically reset to OFF after the console changes device state from "not connected" to "connected".

Resetting FFNEXT to OFF protects the user from accidentally changing the state of disks. Stated in another way, FFNEXT is a one shot. It stays in effect until a "Not Connected" device is accessed.

### 4.2.2.1 EXAMPLE: FFNEXT

```
P00>>>b dga40.1001
(boot dga40.1001.0.6.0 -flags 0)
dga40.1001.0.6.0 is not connected
failed to open dga40.1001.0.6.0
P00>>>set ffnex on
P00>>>b dga40.1001
(boot dga40.1001.0.6.0 -flags 0)
block 0 of dga40.1001.0.6.0 is a valid boot block
reading 896 blocks from dga40.1001.0.6.0
bootstrap code read in
base = 200000, image_start = 0, image_bytes = 70000
initializing HWRPB at 2000
initializing page table at 1ff0000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code
```

OpenVMS (TM) Alpha Operating System, Version X6PC-SSB

```
halted CPU 0
halt code = 5
HALT instruction executed
PC = ffffffff8b4e2ba4
P00>>>show ffnex
ffnext OFF
```





## LFU Scripts and Console Commands Available

The following is a list of LFU scripts available on different platforms. Not every system uses these scripts.

### AlphaStation 600A

The AlphaStation 600A uses the same motherboard as the AlphaServer 1000A. These scripts allow loading of the correct console code into the flash roms.

- **600A\_to\_1000A** - Loads the 1000A console code into a 600A.
- **1000A\_to\_600A** - Loads the 600A console code into a 1000A.

#### **Note:**

The 600A\_to\_1000A and 1000A\_to\_600A scripts were discontinued after the V5.0 CD's. There are to be made available again on the V5.4 CD's. Either use V5.0 CD's or earlier or select the appropriate file name to change the firmware.

### AlphaServer 1000 / 1000A

The AlphaServer 1000 and 1000A come in EV4 and EV5 versions. This script allows you to upgrade from EV4 to EV5 or downgrade from EV5 to EV4 firmware.

#### **Note:**

The cpu\_upgrade and cpu\_downgrade commands are only valid for AlphaServer 1000 and 1000A system which have the older Main Logic Board 54-23499-01.

**DO NOT USE THIS COMMAND ON systems with Main Logic Board 54-23499-02.**

- **cpu\_downgrade** - loads an EV4 SRM and ARC image into the flash roms. Use when downgrading from an EV5 CPU to an EV4 CPU.
- **cpu\_upgrade** - loads an EV5 SRM and ARC image into the flash roms. Use when upgrading from an EV4 CPU to an EV5 CPU.

### AlphaServer 2x00 / 2x00A

- **cpu\_downgrade** - loads an EV4 SRM and ARC image into the flash roms. Use when downgrading from an EV5 CPU to an EV4 CPU. If booting from floppy you need the files sbsrmrom.exe, slsrmrom.exe and sbarcrom.exe.
- **cpu\_upgrade** - loads an EV5 SRM and ARC image into the flash roms. Use when upgrading from an EV4 CPU to an EV5 CPU. If booting from floppy you need the files gmsrmrom.exe, glsrmrom.exe and gmarcrom.exe.
- **make\_dual\_srm** - loads EV5 SRM ROM image into bank 0 and EV4 SRM ROM image into bank 1 thereby returning a good I/O module to a state where it can be returned as a field spare. If booting from floppy you need the files sbsrmrom.exe and slsrmrom.exe.
- **update\_fsl** - updates the failsafe loader.

### AlphaServer 800/1000/1000A/1200/2000/2100/2100A/4000/4100/DS20/DS20E and AlphaStation 600A

Save\_nvram and restore\_nvram available as of V3.9 CD. They have been temporarily removed starting at V5.1. They are scheduled to return on the V5.4 CD. On the AlphaServer 1200/4000/4100/DS20/DS20E systems the SAVE\_NVRAM and RESTORE\_NVRAM scripts will work from the >>> or the UPD> prompt. The other systems require the firmware CD to be booted and the command executed from the UPD> prompt.

- **Save\_NVRAM** - Save the system NVRAM data from 8KB EEROM and last 50 TOY RAM

bytes onto a write-UN-locked FAT formatted floppy to a file. By default, if no script argument is specified, all NVRAM is saved to file ALLNVRAM.SAV. If the file already exists, then a copy of the original file is made to \*.BAK. If that file exists, it is overwritten. Note, attempts to write to a write-locked floppy fail silently.

**Syntax**            **save\_nvram**    [{all,arc,srm,toy}]

**Arguments group** Specifies the group of NVRAM data to be saved. One of

- **all** : All of the 8KB EEROM and 50 bytes of TOY RAM are saved in file allnvram.sav. This is the default, if no argument is specified.
  - **arc** : ARC (AlphaBIOS) data in first 6KB of the 8KB EEROM is saved in file arcnvram.sav.
  - **srm** : SRM console data in last 2KB of the 8KB EEROM is saved in file srmnvram.sav.
  - **toy** : TOY console data in the 50 bytes of TOY RAM is saved in file toynvram.sav.
- 
- **Restore\_NVRAM** - Restore the system NVRAM data to 8KB EEROM and/or last 50 TOY RAM bytes from a floppy containing the NVRAM save file(s). By default, if no script argument is specified, all NVRAM is restored from file ALLNVRAM.SAV.

**Syntax**            **restore\_nvram**    [{all,arc,srm,toy}]

**Arguments group** - Specifies the group of NVRAM data to be restored. One of

- **all** : All of the 8KB EEROM and 50 bytes of TOY RAM are restored from file allnvram.sav. This is the default, if no argument is specified.
- **arc** : ARC (AlphaBIOS) data in first 6KB of the 8KB EEROM is restored from file arcnvram.sav.
- **srm** : SRM console data in last 2KB of the 8KB EEROM is restored from file srmnvram.sav.
- **toy** : TOY data in last 50 bytes of 64 bytes in TOY RAM is retorted from file toynvram.sav.

#### NOTE

The save\_NVRAM and restore\_NVRAM commands are available under the Loadable Firmware Utility or the >>> depending on system type. The commands save or restore NVRAM configuration data. This feature is useful if upgrading a system's motherboard and you wish to restore the systems previous NVRAM context. To get to the UPD prompt, boot the Alpha Firmware CD and press the enter-key after the Bootfile: prompt.

I have tested this feature and it restores console environmental variables, WNT boot selections and EISA configuration data.

#### All Systems

- **read\_rel\_notes** - allows you to read the firmware release notes from UPD> .

## Online commands for OSF/1, Unix and OpenVMS to Get Firmware and CPU Rev Info

### Unix

To get processor speed and EV version under Unix V4.0

```
$PWD> psrinfo -v
Status of processor 0 as of: 03/07/97 01:30:42
 Processor has been on-line since 03/06/97 19:23:09
 The alpha EV5 (21164) processor operates at 291 MHz,
 and has an alpha internal floating point processor.
Status of processor 1 as of: 03/07/97 01:30:42
 Processor has been on-line since 03/06/97 19:23:09
 The alpha EV5 (21164) processor operates at 291 MHz,
 and has an alpha internal floating point processor.
```

### Unix and OSF/1

To get console firmware version from errorlog on a OSF/1 or UNIX system check the startup errlog entry. You can also get startup entries from the messages file.

```
$PWD> /var/adm/messages tail -300 messages | more - Messages file
$PWD> /usr/sbin/uerf -R -o full -r 300 - Uerf command
$PWD> /usr/sbin/dia -R -o full -i 300 - DIA command
$PWD> /usr/sbin/dia -R -o full -i cont - DIA command (control entries)
Can also try osf_entry , swi or information
```

```
***** ENTRY 1.*****
```

----- EVENT INFORMATION -----

| EVENT CLASS        |           | OPERATIONAL EVENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OS EVENT TYPE      | 300.      | SYSTEM STARTUP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| SEQUENCE NUMBER    | 0.        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| OPERATING SYSTEM   |           | DEC OSF/1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| OCCURRED/LOGGED ON |           | Thu Mar 6 19:23:35 1997                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| OCCURRED ON SYSTEM |           | pls001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| SYSTEM ID          | x00050018 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| SYSTYPE            | x00000000 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| MESSAGE            |           | Alpha boot: available memory from<br>_0xfef000 to 0x1ffff000<br>Digital UNIX V4.0A (Rev. 464); Thu<br>Dec 5 15:44:27 EST 1996<br>physical memory = 512.00 megabytes.<br>available memory = 496.07 megabytes.<br>using 1958 buffers containing 15.29<br>_megabytes of memory<br>Master cpu at slot 0.<br>Firmware revision: 4.5<br>PALcode: OSF version 1.21<br>ibus0 at nexus<br>AlphaServer 2100A 5/300<br>cpu 0 EV-5 4mb b-cache<br>cpu 1 EV-5 4mb b-cache<br>gpc0 at ibus0<br>pci0 at ibus0 slot 0<br>eisa0 at pci0<br>ace0 at eisa0<br>ace1 at eisa0<br>lp0 at eisa0<br>fdi0 at eisa0<br>fd0 at fdi0 unit 0<br>pci2000 at pci0 slot 3<br>psiop0 at pci2000 slot 1<br>Loading SIOP: script 1007800, reg |

```

_81818000, data 406b37a8
scsi0 at psiop0 slot 0
rz0 at scsi0 target 0 lun 0 (LID=0)
_(DEC RZ29B (C) DEC 0014)
_(Wide16)
rz1 at scsi0 target 1 lun 0 (LID=1)
_(DEC RZ29B (C) DEC 0014)
_(Wide16)
rz2 at scsi0 target 2 lun 0 (LID=2)
_(DEC RZ29B (C) DEC 0016)
_(Wide16)
rz6 at scsi0 target 6 lun 0 (LID=3)
_(DEC RRD45 (C) DEC 1645)
Initializing xcr0. Please wait....
xcr0 at pci2000 slot 6
re0 at xcr0 unit 0 (unit status =
_ONLINE, raid level = 5)
re1 at xcr0 unit 1 (unit status =
_ONLINE, raid level = 5)
psiop1 at pci2000 slot 7
Loading SIOP: script 1013800, reg
_81818100, data 406b3ba8
scsil at psiop1 slot 0
rz8 at scsil target 0 lun 0 (LID=4)
_(DEC RZ29B (C) DEC 0014)
_(Wide16)
rz9 at scsil target 1 lun 0 (LID=5)
_(DEC RZ29B (C) DEC 0014)
_(Wide16)
rz10 at scsil target 2 lun 0 (LID=6)
_(DEC RZ29B (C) DEC 0014)
_(Wide16)
tz12 at scsil target 4 lun 0 (LID=7)
_(DEC TZ88 (C) DEC CC34)
tz13 at scsil target 5 lun 0 (LID=8)
_(DEC TLZ09 (C) DEC 0165)
tu0: DECchip 21040-AA: Revision: 2.4
tu0 at pci2000 slot 8
tu0: DEC TULIP Ethernet Interface,
_hardware address: 00-00-F8-22-38-E3
tu0: console mode: selecting 10BaseT
_(UTP) port: half duplex
fta0 DEC DEFPA FDDI Module, Hardware
_Revision 0
fta0 at pci2000 slot 9
fta0: DMA Available.
fta0: DEC DEFPA (PDQ) FDDI Interface,
_Hardware address: 00-00-F8-40-DA-06
fta0: Firmware rev: 2.46
trio0 at pci0 slot 6
trio0: S3 Trio64 (SVGA) - Plug N' Play
_- 1.0 Mb

```

## OpenVMS

To find the console version on an OpenVMS AXP system running V6.1 use the following:

```
SDA> CLUE CONFIG to get console version
```

For systems running V7.2 you can access the FRU tables from a crash or online SDA.

```
SDA> CLUE FRU
```

```
SDA> exit
```

```
$ diagnose clue$fru.sys - Shows FRU packets. Not available on all systems
```

For systems running V6.2 and later the following commands are available

```
SDA> CLUE SCSI/SUM to get disk/tape firmware info.
```

```
SDA> CLUE SCSI/PORT to get KZPSA SCSI ID.
```

### \$ Anal/sys

```
SDA> Clue Config
```

System Configuration:

-----

System Information:

|             |                    |                |           |
|-------------|--------------------|----------------|-----------|
| System Type | DEC 4000 Model 720 | Primary CPU ID | 00        |
| Cycle Time  | 5.2 nsec (190 MHz) | Pagesize       | 8192 Byte |

Memory Configuration:

| Cluster | PFN Start | PFN Count | Range (MByte)       | Usage   |
|---------|-----------|-----------|---------------------|---------|
| #02     | 0         | 251       | 0.0 MB - 1.9 MB     | Console |
| #03     | 251       | 32516     | 1.9 MB - 255.9 MB   | System  |
| #04     | 32767     | 1         | 255.9 MB - 256.0 MB | Console |

Per-CPU Slot Processor Information:

|               |                    |                          |                       |
|---------------|--------------------|--------------------------|-----------------------|
| CPU ID        | 00                 | CPU State                | rc,pa,pp,cv,pv,pmv,pl |
| CPU Type      | EV4 Pass 3 (21064) | Halt PC                  | 00000000.20000000     |
| PAL Code      | 5.48               | Halt PS                  | 00000000.00001F00     |
| CPU Revision  | A100               | Halt Code                | 00000000.00000000     |
| Serial Number | AY33692990         | "Bootstrap or Powerfail" |                       |
| Console Vers  | V3.4-6             |                          |                       |

|        |    |           |                       |
|--------|----|-----------|-----------------------|
| CPU ID | 01 | CPU State | rc,pa,pp,cv,pv,pmv,pl |
|--------|----|-----------|-----------------------|

System Configuration:

-----

|               |                    |                          |                   |
|---------------|--------------------|--------------------------|-------------------|
| CPU Type      | EV4 Pass 3 (21064) | Halt PC                  | 00000000.00000000 |
| PAL Code      | 5.48               | Halt PS                  | 00000000.00001F00 |
| CPU Revision  | A100               | Halt Code                | 00000000.00000000 |
| Serial Number | AY34624309         | "Bootstrap or Powerfail" |                   |
| Console Vers  | V3.4-6             |                          |                   |

Adapter Configuration:

-----

| TR Adapter | ADP | Hose | Bus | BusArrayEntry | Node | Device Name / HW-Id |
|------------|-----|------|-----|---------------|------|---------------------|
|------------|-----|------|-----|---------------|------|---------------------|

-----

|   |             |          |   |          |   |                   |
|---|-------------|----------|---|----------|---|-------------------|
| 1 | KA0202      | 80C706C0 | 0 | CBUS     |   |                   |
|   |             |          |   | 80C70898 | 0 | KA0202_IO         |
|   |             |          |   | 80C708D0 | 1 | KA0202_CPU        |
|   |             |          |   | 80C70908 | 2 | KA0202_CPU        |
|   |             |          |   | 80C70940 | 3 | KA0202_MEM        |
|   |             |          |   | 80C709B0 | 5 | KA0202_MEM        |
| 2 | KA0202_LBUS | 80C70A40 | 0 | LBUS     |   |                   |
|   |             |          |   | 80C70C18 | 0 | NCR 53C710 SCSI   |
|   |             |          |   | 80C70C50 | 1 | NCR 53C710 SCSI   |
|   |             |          |   | 80C70C88 | 2 | NCR 53C710 SCSI   |
|   |             |          |   | 80C70CF8 | 4 | NCR 53C710 SCSI   |
|   |             |          |   | 80C70D68 | 6 | DC253             |
|   |             |          |   | 80C70DD8 | 8 | PCD8584           |
| 3 | FBUS        | 80C70E40 | 1 | FBUS     |   |                   |
|   |             |          |   | 80C71018 | 0 | 0008002B.32304000 |

```
SDA>
```

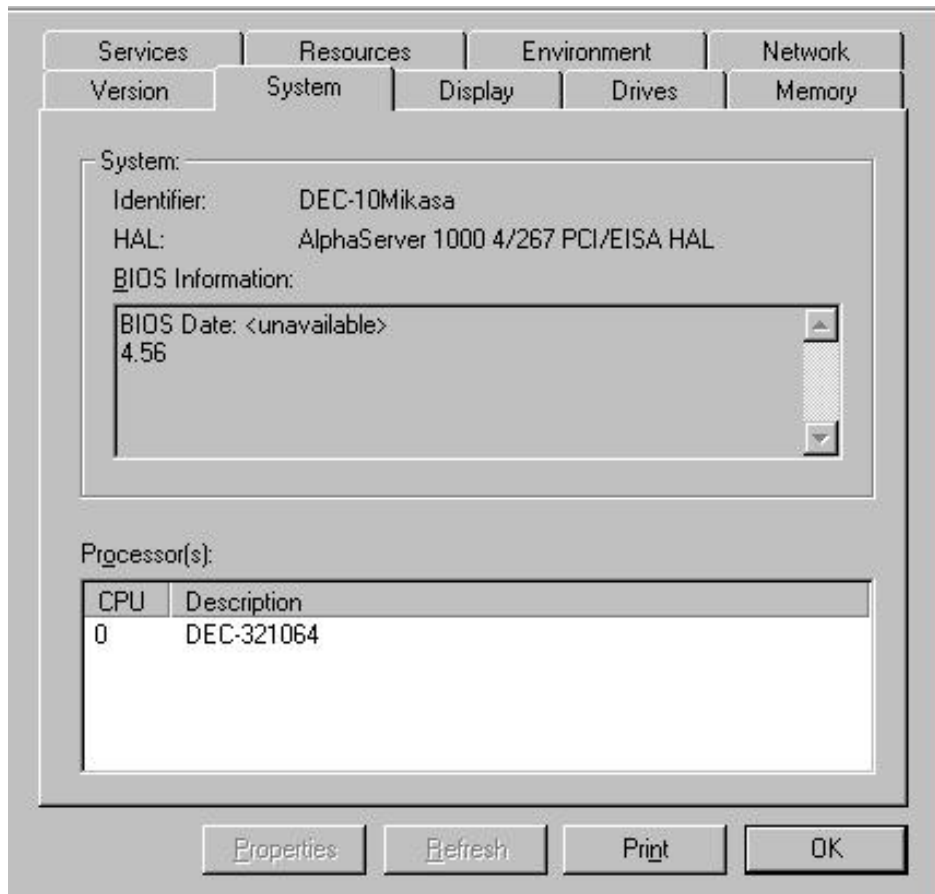
## WNT

The following procedure allows you to determine the AlphaBIOS version when WNT is running. You need to check the **Windows NT Diagnostic Menu** Use one of the following methods.

Go to the **Start bar**, Select **Programs**, then **Administrative Tools (Common)** and then select , **Windows NT Diagnostics**

OR

1. Open an MSDOS window
2. Type **winmsd** to bring up the **Windows NT Diagnostic Menu**
3. Select **SYSTEM**. The **BIOS information** indicates the AlphaBIOS version.







## How to Determine Firmware Revision of KZPBA-CA or KZPBA-CB with OpenVMS V7.1 and V7.2

This is the procedure to find out the firmware revision of a KZPBA-CA or KZPBA-CB running VMS version 7.1 or 7.2. The firmware for the KZPBA-CA or KZPBA-CB is loaded by the Alpha console on each system initialization.

1. Go into online SDA.  
\$ ANAL/SYSTEM

2. Execute the CLUE SCSI/PORT command. Look for the **SCSI QLogic ISP1020** Port Type

SDA> CLUE SCSI/PORT

SCSI Port Descriptor (SPDT):

```
PKE0:
SPDT Address 80D8F740 Driver SYS$PKQDRIVER
ADP Address 80D3E580 Port Type SCSI QLogic ISP1020 (This is a KZPBA adapter)
UCB Address 80DA2E80 Adapter PCI
Busarray Address 80D3E780 Device QLOGIC
Port Flags synch,asynch,mapping_reg,dir_dma,luns,cmdq,port_aut
Port Device Status online
Port Dev Status at DIPL -
Target init'd Bus Resets 0 Number of Events 0
Retry Attempts 0 Curr I/Os on all Ports 0
Stray Interrupts 0 Curr I/Os on all Devices 0
Unexpected Interrupts 0 Total Outstanding I/Os 0
Reselections 0
CRAB Address 80D48980 Port Wait Queue empty
Port CRAM Address 00000000 Nonpg Pool FKB Que empty
Port IDB Address 80DA2E00 Bus Reset Waiters empty
Queue Manager's KPB 80DA3580 Queue Manager's SCDRP 00000000
```

3. Format the SPDT Address data structure.

```
SDA> for 80D8F740 SPDT address
FFFFFFFF.80D8F740 SPDT$L_FLINK 80D893C0
FFFFFFFF.80D8F744 SPDT$L_VERSION_CHECK 00080B06
FFFFFFFF.80D8F748 SPDT$W_SIZE 0540
FFFFFFFF.80D8F74A SPDT$B_TYPE 79
FFFFFFFF.80D8F74B SPDT$B_SUBTYP 0E
FFFFFFFF.80D8F74C SPDT$W_SPDT_TYPE 0000
FFFFFFFF.80D8F74E SPDT$L SCSI PORT ID 00000004
FFFFFFFF.80D8F750 SPDT$L SCSI BUS ID 00000080
FFFFFFFF.80D8F754 SPDT$IIS SCSI ID_NUM 00000007
FFFFFFFF.80D8F758 SPDT$Q SCSI ID_NUM
SPDT$R SCSI ID_OVERLAY
FFFFFFFF.80D8F75C
FFFFFFFF.80D8F760 SPDT$L PORT_FLAGS 00000000
 000206D7
```

|                   |                                 |          |                      |
|-------------------|---------------------------------|----------|----------------------|
| FFFFFFFF.80D8F764 | SPDT\$IL_STS                    | 00008001 | SYS\$PKQDRIVER+1DAA0 |
| FFFFFFFF.80D8F768 | SPDT\$IL_DIPL_STS               | 00000000 | SYS\$PKQDRIVER+1DC20 |
| FFFFFFFF.80D8F76C | SPDT\$IS_FLCK                   | 0000003A | SYS\$PKQDRIVER+1DBD0 |
| FFFFFFFF.80D8F770 | SPDT\$IL_DLCK                   | 80D89C80 | SYS\$PKQDRIVER+1DD00 |
| FFFFFFFF.80D8F774 | SPDT\$B_DIPL                    | 15       | SYS\$PKQDRIVER+1DCE0 |
| FFFFFFFF.80D8F775 |                                 | 000000   | SYS\$PKQDRIVER+14FC8 |
| FFFFFFFF.80D8F778 | SPDT\$IS_SAVIPL                 | 00000000 | SYS\$PKQDRIVER+145B0 |
| FFFFFFFF.80D8F77C | SPDT\$IW_ERL_TYPE               | 0000     | SYS\$PKQDRIVER+14600 |
| FFFFFFFF.80D8F77E |                                 | 0000     | SYS\$PKQDRIVER+14620 |
| FFFFFFFF.80D8F780 | SPDT\$IS_CRCTX_SHIFT            | 0000000D | SYS\$PKQDRIVER+14648 |
| FFFFFFFF.80D8F784 | SPDT\$IS_CRCTX_BWP_MASK         | 00001FFF | SYS\$PKQDRIVER+14668 |
| FFFFFFFF.80D8F788 | SPDT\$IS_SCSI_INT_MSK           | 00000000 | SYS\$PKQDRIVER+14688 |
| FFFFFFFF.80D8F78C | SPDT\$IL_MAXBYTECNT             | 00020000 | SYS\$PKQDRIVER+146C8 |
| FFFFFFFF.80D8F790 | SPDT\$IL_TIMEOUT_COUNT          | 00000000 | SYS\$PKQDRIVER+14710 |
| FFFFFFFF.80D8F794 | SPDT\$PS_CD_ABORT_COMMAND       | 80CF88A0 | SYS\$PKQDRIVER+14770 |
| FFFFFFFF.80D8F798 | SPDT\$PS_CD_BUFFER_MAP          | 80CF8A20 | SYS\$PKQDRIVER+14E78 |
| FFFFFFFF.80D8F79C | SPDT\$PS_CD_BUFFER_UNMAP        | 80CF89D0 |                      |
| FFFFFFFF.80D8F7A0 | SPDT\$PS_CD_CMD_BUFFER_ALLOC    | 80CF8B00 |                      |
| FFFFFFFF.80D8F7A4 | SPDT\$PS_CD_CMD_BUFFER_DEALLOC  | 80CF8AE0 |                      |
| FFFFFFFF.80D8F7A8 | SPDT\$PS_CD_CONNECT             | 80CEFD8  |                      |
| FFFFFFFF.80D8F7AC | SPDT\$PS_CD_CONNECTION_CHAR_GET | 80CEF3B0 |                      |
| FFFFFFFF.80D8F7B0 | SPDT\$PS_CD_CONNECTION_CHAR_SET | 80CEF400 |                      |
| FFFFFFFF.80D8F7B4 | SPDT\$PS_CD_DISCONNECT          | 80CEF420 |                      |
| FFFFFFFF.80D8F7B8 | SPDT\$PS_CD_QUEUE_FLUSH         | 80CEF448 |                      |
| FFFFFFFF.80D8F7BC | SPDT\$PS_CD_QUEUE_FREEZE        | 80CEF468 |                      |
| FFFFFFFF.80D8F7C0 | SPDT\$PS_CD_QUEUE_RELEASE       | 80CEF488 |                      |
| FFFFFFFF.80D8F7C4 | SPDT\$PS_CD_RESET_DEVICE        | 80CEF4C8 |                      |
| FFFFFFFF.80D8F7C8 | SPDT\$PS_CD_RESET_SCSI_BUS      | 80CEF510 |                      |
| FFFFFFFF.80D8F7CC | SPDT\$PS_CD_SEND_COMMAND        | 80CEF570 |                      |
| FFFFFFFF.80D8F7D0 | SPDT\$PS_CD_INITIAL_PROCESSING  | 80CEFC78 |                      |
| FFFFFFFF.80D8F7D4 | SPDT\$PS_CD_GET_PATH_INFO       | 00000000 |                      |
| FFFFFFFF.80D8F7D8 | SPDT\$PS_CD_SCSI_PATH_CONNECT   | 80CEFDA8 |                      |
| FFFFFFFF.80D8F7DC | SPDT\$PS_CD_GET_PORT_WWID       | 00000000 |                      |
| FFFFFFFF.80D8F7E0 |                                 | 00000000 |                      |
| FFFFFFFF.80D8F7E4 |                                 | 00000000 |                      |
| FFFFFFFF.80D8F7E8 | SPDT\$PS_PK_ABORT_COMMAND       | 80CF88A0 | SYS\$PKQDRIVER+1DAA0 |
| FFFFFFFF.80D8F7EC | SPDT\$PS_PK_CMD_BUFFER_ALLOC    | 80CF8B00 | SYS\$PKQDRIVER+1DD00 |
| FFFFFFFF.80D8F7F0 | SPDT\$PS_PK_CMD_BUFFER_DEALLOC  | 80CF8AE0 | SYS\$PKQDRIVER+1DCE0 |
| FFFFFFFF.80D8F7F4 | SPDT\$PS_PK_CMD_WAIT_COMPLETION | 80CF8948 | SYS\$PKQDRIVER+1DB48 |
| FFFFFFFF.80D8F7F8 | SPDT\$PS_PK_CONNECT             | 80CEF728 | SYS\$PKQDRIVER+14928 |
| FFFFFFFF.80D8F7FC | SPDT\$PS_PK_CONNECTION_CHAR_SET | 80CEF728 | SYS\$PKQDRIVER+14928 |
| FFFFFFFF.80D8F800 | SPDT\$PS_PK_INIT_SPDT           | 80CEF728 | SYS\$PKQDRIVER+14928 |
| FFFFFFFF.80D8F804 | SPDT\$PS_PK_INIT_STDT           | 80CEF728 | SYS\$PKQDRIVER+14928 |
| FFFFFFFF.80D8F808 | SPDT\$PS_PK_NEGOTIATE_SYNC      | 80CF88B0 | SYS\$PKQDRIVER+1DAB0 |
| FFFFFFFF.80D8F80C | SPDT\$PS_PK_QUEUE_FLUSH         | 80CEF748 | SYS\$PKQDRIVER+14948 |
| FFFFFFFF.80D8F810 | SPDT\$PS_PK_QUEUE_FREEZE        | 80CEF748 | SYS\$PKQDRIVER+14948 |
| FFFFFFFF.80D8F814 | SPDT\$PS_PK_QUEUE_RELEASE       | 80CEF748 | SYS\$PKQDRIVER+14948 |
| FFFFFFFF.80D8F818 | SPDT\$PS_PK_RESET_SCSI_BUS      | 80CF8B20 | SYS\$PKQDRIVER+1DD20 |
| FFFFFFFF.80D8F81C | SPDT\$PS_PK_SEND_COMMAND        | 80CF8988 | SYS\$PKQDRIVER+1DB88 |
| FFFFFFFF.80D8F820 | SPDT\$PS_PK_GET_PATH_INFO       | 00000000 |                      |
| FFFFFFFF.80D8F824 |                                 | 00000000 |                      |
| FFFFFFFF.80D8F828 |                                 | 00000000 |                      |

|                   |                                  |            |                        |
|-------------------|----------------------------------|------------|------------------------|
| FFFFFFFF.80D8F82C | SPDT\$PS_RL_CHECK_CMDQ_STATUS    | 80CEF768   | SYS\$PKQDRIVER+14968   |
| FFFFFFFF.80D8F830 | SPDT\$PS_RL_CHECK_ONDECK_BLOCKED | 80CEF788   | SYS\$PKQDRIVER+14988   |
| FFFFFFFF.80D8F834 | SPDT\$PS_RL_CMD_SLOT_ALLOC       | 80CEF7A8   | SYS\$PKQDRIVER+149A8   |
| FFFFFFFF.80D8F838 | SPDT\$PS_RL_CMD_SLOT_DEALLOC     | 80CEF7F0   | SYS\$PKQDRIVER+149F0   |
| FFFFFFFF.80D8F83C | SPDT\$PS_RL_CREATE_PORT          | 80CEF810   | SYS\$PKQDRIVER+14A10   |
| FFFFFFFF.80D8F840 | SPDT\$PS_RL_POOL_ALLOC           | 80CEFA00   | SYS\$PKQDRIVER+14C00   |
| FFFFFFFF.80D8F844 | SPDT\$PS_RL_POOL_ALLOC_PHYSICAL  | 80CEFA30   | SYS\$PKQDRIVER+14C30   |
| FFFFFFFF.80D8F848 | SPDT\$PS_RL_POOL_DEALLOC         | 80CEFA70   | SYS\$PKQDRIVER+14C70   |
| FFFFFFFF.80D8F84C | SPDT\$PS_RL_INIT_SCDRP           | 80CEF9D8   | SYS\$PKQDRIVER+14BD8   |
| FFFFFFFF.80D8F850 | SPDT\$PS_RL_TIMEOUT_SETUP_TQE    | 80CEFC40   | SYS\$PKQDRIVER+14E40   |
| FFFFFFFF.80D8F854 | SPDT\$PS_RL_QUEUE_RESET_DIPL     | 80CEFAA0   | SYS\$PKQDRIVER+14CA0   |
| FFFFFFFF.80D8F858 | SPDT\$PS_RL_QUEUE_RESET_FORK     | 80CEFAE8   | SYS\$PKQDRIVER+14CE8   |
| FFFFFFFF.80D8F85C | SPDT\$PS_RL_RESET_DETECTED_DIPL  | 80CEFB28   | SYS\$PKQDRIVER+14D28   |
| FFFFFFFF.80D8F860 | SPDT\$PS_RL_RESET_DETECTED_FORK  | 80CEFB60   | SYS\$PKQDRIVER+14D60   |
| FFFFFFFF.80D8F864 | SPDT\$PS_RL_RESET_DETECTED_WAIT  | 80CEFB08   | SYS\$PKQDRIVER+14D08   |
| FFFFFFFF.80D8F868 |                                  | 00000000   |                        |
| FFFFFFFF.80D8F86C |                                  | 00000000   |                        |
| FFFFFFFF.80D8F870 | SPDT\$L_PORT_WQFL                | 80D8F870   | SPDT+00130             |
| FFFFFFFF.80D8F874 | SPDT\$L_PORT_WQBL                | 80D8F870   | SPDT+00130             |
| FFFFFFFF.80D8F878 | SPDT\$L_WAITQFL                  | 00000000   |                        |
| FFFFFFFF.80D8F87C | SPDT\$L_WAITQBL                  | 00000000   |                        |
| FFFFFFFF.80D8F880 | SPDT\$PS_RESET_WAIT_LIST         | 00000000   |                        |
| FFFFFFFF.80D8F884 | SPDT\$L_ADP                      | 80D51640   | ADP                    |
| FFFFFFFF.80D8F888 | SPDT\$PS_CRAB                    | 80D5BA80   |                        |
| FFFFFFFF.80D8F88C | SPDT\$PS_PORT_CRAM               | 00000000   |                        |
| FFFFFFFF.80D8F890 | SPDT\$L_PORT_IDB                 | 80D89D00   |                        |
| FFFFFFFF.80D8F894 | SPDT\$L_PORT_UCB                 | 80D89D80   | PORT_UCB               |
| FFFFFFFF.80D8F898 | SPDT\$PS_HRL_SCDT                | 00000000   |                        |
| FFFFFFFF.80D8F89C | SPDT\$L_SCSI_DEBUG               | 00000000   |                        |
| FFFFFFFF.80D8F8A0 | SPDT\$PS_QMAN_KPB                | 80D57440   | QMAN_KPB               |
| FFFFFFFF.80D8F8A4 | SPDT\$PS_CHIP_KPB                | 00000000   |                        |
| FFFFFFFF.80D8F8A8 | SPDT\$PS_ONDECK_KPB              | 00000000   |                        |
| FFFFFFFF.80D8F8AC |                                  | 00000000   |                        |
| FFFFFFFF.80D8F8B0 | SPDT\$B_TQE                      | 30         |                        |
| FFFFFFFF.80D8F8B1 |                                  | 80D895     | DECW\$XMLIBSHR12+87895 |
| FFFFFFFF.80D8F8B4 |                                  | 80D83F80   |                        |
| FFFFFFFF.80D8F8B8 |                                  | 050F0040   |                        |
| FFFFFFFF.80D8F8BC |                                  | 80CEFCB0   | SYS\$PKQDRIVER+14EB0   |
| FFFFFFFF.80D8F8C0 |                                  | 00000000   |                        |
| FFFFFFFF.80D8F8C4 |                                  | 00000000   |                        |
| FFFFFFFF.80D8F8C8 |                                  | 00000000   |                        |
| FFFFFFFF.80D8F8CC |                                  | 80D8F740   | SPDT                   |
| FFFFFFFF.80D8F8D0 |                                  | FFFFFFFFFF |                        |
| FFFFFFFF.80D8F8D4 |                                  | 77E2C0C3   |                        |
| FFFFFFFF.80D8F8D8 |                                  | 009D44E4   |                        |
| FFFFFFFF.80D8F8DC |                                  | 02FAF080   |                        |
| FFFFFFFF.80D8F8E0 |                                  | 00000000   |                        |
| FFFFFFFF.80D8F8E4 |                                  | 00000000   |                        |
| FFFFFFFF.80D8F8E8 |                                  | 00000000   |                        |
| FFFFFFFF.80D8F8EC |                                  | 00000000   |                        |
| FFFFFFFF.80D8F8F0 | SPDT\$L_TQE_DELAY                | 00000000   |                        |
| FFFFFFFF.80D8F8F4 |                                  | 00000000   |                        |

|                   |                           |           |                      |
|-------------------|---------------------------|-----------|----------------------|
| FFFFFFFF.80D8F8F8 | SPDT\$R_RESET_FKB         | 80D0E038  |                      |
| FFFFFFFF.80D8F8FC |                           | 80D0E038  |                      |
| FFFFFFFF.80D8F900 |                           | 3A080020  |                      |
| FFFFFFFF.80D8F904 |                           | 80CEFBAD8 | SYS\$PKQDRIVER+14CD8 |
| FFFFFFFF.80D8F908 |                           | 00000000  |                      |
| FFFFFFFF.80D8F90C |                           | 00000000  |                      |
| FFFFFFFF.80D8F910 |                           | 80D8F740  | SPDT                 |
| FFFFFFFF.80D8F914 |                           | FFFFFFFF  |                      |
| FFFFFFFF.80D8F918 | SPDT\$R_RESET_CLEANUP_FKB | 80D0E038  |                      |
| FFFFFFFF.80D8F91C |                           | 3A080020  |                      |
| FFFFFFFF.80D8F924 |                           | 80CEFB50  | SYS\$PKQDRIVER+14D50 |
| FFFFFFFF.80D8F928 |                           | 80D8F740  | SPDT                 |
| FFFFFFFF.80D8F92C |                           | FFFFFFFF  |                      |
| FFFFFFFF.80D8F930 |                           | 80D8F740  | SPDT                 |
| FFFFFFFF.80D8F934 |                           | FFFFFFFF  |                      |
| FFFFFFFF.80D8F938 |                           | 00000000  |                      |
| FFFFFFFF.80D8F93C | SPDT\$L_DMA_BASE          | 00000000  |                      |
| FFFFFFFF.80D8F940 | SPDT\$L_SPT_E_BASE        | 00000000  |                      |
| FFFFFFFF.80D8F944 | SPDT\$L_SPT_E_SWAPTE      | 00000000  |                      |
| FFFFFFFF.80D8F948 | SPDT\$IS_EXTWAPREG        | 00000002  |                      |
| FFFFFFFF.80D8F94C | SPDT\$L_TARRST_CNT        | 00000000  |                      |
| FFFFFFFF.80D8F950 | SPDT\$L_RETRY_CNT         | 00000000  |                      |
| FFFFFFFF.80D8F954 | SPDT\$L_STRAY_INT_CNT     | 00000000  |                      |
| FFFFFFFF.80D8F958 | SPDT\$L_UNEXP_INT_CNT     | 00000000  |                      |
| FFFFFFFF.80D8F95C | SPDT\$L_NODISCON_CNT      | 00000000  |                      |
| FFFFFFFF.80D8F960 | SPDT\$IS_EVENT_CNT        | 00000000  |                      |
| FFFFFFFF.80D8F964 | SPDT\$IS_TOTAL_IO_COUNT   | 00000000  |                      |
| FFFFFFFF.80D8F968 | SPDT\$IS_PORT_IO_COUNT    | 00000000  |                      |
| FFFFFFFF.80D8F96C | SPDT\$IS_DEV_IO_COUNT     | 00000000  |                      |
| FFFFFFFF.80D8F970 | SPDT\$IS_QUEUE_SPINS      | 0000CDB   |                      |
| FFFFFFFF.80D8F974 | SPDT\$IS_QUEUE_EXITS      | 0000CDB   |                      |
| FFFFFFFF.80D8F978 | SPDT\$PS_STDT_HASH_TABLE  | 80E1E900  |                      |
| FFFFFFFF.80D8F97C |                           | 00000000  |                      |
| FFFFFFFF.80D8F980 |                           | 00000000  |                      |
| FFFFFFFF.80D8F984 |                           | 80DF7AC0  |                      |
| FFFFFFFF.80D8F988 |                           | 80E1E340  |                      |
| FFFFFFFF.80D8F98C |                           | 00000000  |                      |
| FFFFFFFF.80D8F990 |                           | 00000000  |                      |
| FFFFFFFF.80D8F994 |                           | 00000000  |                      |
| FFFFFFFF.80D8F998 |                           | 00000000  |                      |
| FFFFFFFF.80D8F99C |                           | 00000000  |                      |
| FFFFFFFF.80D8F9A0 |                           | 00000000  |                      |
| FFFFFFFF.80D8F9A4 |                           | 00000000  |                      |
| FFFFFFFF.80D8F9A8 |                           | 00000000  |                      |
| FFFFFFFF.80D8F9AC |                           | 00000000  |                      |
| FFFFFFFF.80D8F9B0 |                           | 00000000  |                      |
| FFFFFFFF.80D8F9B4 | SPDT\$PS_CMD_BASE         | 00000000  |                      |
| FFFFFFFF.80D8F9B8 | SPDT\$PS_CMD_SPDT         | 80D8F740  | SPDT                 |
| FFFFFFFF.80D8F9BC | SPDT\$PS_CMDWTFIL         | 80D8F9BC  | SPDT+0027C           |
| FFFFFFFF.80D8F9C0 | SPDT\$PS_CMDWTBL          | 80D8F9BC  | SPDT+0027C           |
| FFFFFFFF.80D8F9C4 | SPDT\$IL_CMD_BITS         | FFFFFFFF  |                      |

```

FFFFFFFF.80D8F9C8
FFFFFFFF.80D8F9CC
FFFFFFFF.80D8F9D0
FFFFFFFF.80D8F9D4
FFFFFFFF.80D8F9D8
FFFFFFFF.80D8F9DC
FFFFFFFF.80D8F9E0
FFFFFFFF.80D8F9E4
 SPDT$IW_MAX_BUS_WIDTH
 SPDT$L_SCSI_BUS_WIDTHS
 SPDT$IW_CONFIG_BUS_WIDTH
 SPDT$L_SCSI_AUTO_ID
 SPDT$L_RSVD_LONG
 SPDT$L_PORT_SPECIFIC
 0010
 0010
 00000000
 00000000
 00000000
 00000000
 00000000
 00000000

```

4. Examine 80 off the last address (OpenVMS 7.2) or 50 off the last address (OpenVMS 7.1)

```

SDA> EXAMINE 80D8F9F8+80
FFFFFFFF.80D8FA78: 0000062.0000022D

```

5. Evaluate the data in the last longword (0000022D) to get the firmware revision.

```

SDA> EVAL 0000022D
Hex = 00000000.0000022D Decimal = 557 UCB$L_CICMD+00001

```

The firmware for the KZPBA would be the decimal value 557.



## How to Boot RCU off of the firmware Update CD

You can run the RCU utilities off of the CD. However you can not update firmware. To boot the CD, do the following.

- a. Determine the directory structure on the CD you are using.
- b. Get to the run a program selection of the ARC console.  
Run A Program **CD:\utility\swxcrmgr\swxcrmgr** - good from V3.6 to the V3.8 CD.  
**CD:\utility\swxcrmgr\ra200rcu** - good for the V3.9 CD and later.  
**CD:\cdrom\utility\swxcrmgr\swxcrmgr** - good up to the 3.5 CD

You will get into the swxcr utility. You can change config and save to floppy but you can not update firmware.





## **How to Create a RAID Standalone Configuration Utility [RCU] Floppy**

### **Procedure**

In order to create a standalone Raid Array Software floppy (RCU) you will need a PC or Alpha with a CD-ROM and a floppy drive. You also need an Alpha Systems Firmware CD. The RCU files are located on the Alpha Systems Firmware CD. These files are located the following directories

CD version V3.5 and earlier are located at   \cdrom\utility\swxcrmgr\  
CD versions V3.6 and later are located at   \utility\swxcrmgr\

The utility has different names depending on which CD you use. The filenames are as follows

### **Utility Filename Definitions**

Filenames used up to the V3.8 CD

- SWXCRMGR.EXE   Standalone SWXCRMGR utility
- SWXCRFW.EXE    SWXCR firmware update utility
- SRLMGR.EXE     SWXCR Serial utility

The utility filenames changed as of the V3.9 CD.

- RA200RCU.EXE    Standalone SWXCRMGR utility
- RA200FL.EXE     SWXCR firmware update utility
- RA200SRL.EXE    SWXCR Serial utility

### **Firmware Filenames Definitions**

The firmware and EISA configuration files as of the V5.2 Alpha Systems Firmware Update CD are as follows

|              |                                                                                  |
|--------------|----------------------------------------------------------------------------------|
| SWXCRFWP.242 | KZPAC/KZPSC PCI SWXCR firmware version 2.42                                      |
| SWXCRFWP.249 | KZPAC/KZPSC PCI SWXCR firmware version 2.49 - Required for SWCC support          |
| SWXCRFWP.270 | KZPAC PCI SWXCR firmware version 2.70                                            |
| SWXCRFWA.216 | KZESC EISA SWXCR firmware version 2.16                                           |
| !MLX0075.CFG | Windows NT EISA configuration file for the 3 channel EISA raid controller.       |
| !MLX0077.CFG | Windows NT EISA configuration file for the 1 channel EISA raid controller.       |
| AMLX0075.CFG | VMS/Digital UNIX EISA configuration file for the 3 channel EISA RAID controller. |
| AMLX0077.CFG | VMS/Digital UNIX EISA configuration file for the 1 channel EISA RAID controller. |

### **Windows 95**

Copy the appropriate files from CD-ROM to Floppy diskette on a PC as described below.

1. Insert Firmware CD-ROM in drive
2. Insert formatted floppy diskette in drive A:
3. Select File Manager\
4. Select Window
5. Select New Window
6. Select Tile Horizontally
7. Select CD-ROM drive in one window
8. Select Floppy drive in the other window

9. Select the directory \utility\swxcrmgr\ in cd window
10. Copy ALL files from the \utility\swxcrmgr\ directory to the floppy diskette except the Jensen directory, the .txt and the .lst files since there is not enough room on the floppy for them.  
     e.g. \utility\swxcrmgr\\*.\* to A:\  
     If you have the 3.5 or earlier CD the directory structure is as follows  
         \cdrom\utility\swxcrmgr\
11. Select all the files in the directory including the following firmware files.  
     swxcrfwa.216 (eisa)  
     swxcrfwp.236 (PCI)      (3.5 thru 3.8 CD)  
     swxcrfwp.242 (PCI)      (3.9 - 5.3 CD)  
     swxcrfwp.249 (PCI)      (5.2 - 5.6 CD)  
     swxcrfwp.270 (PCI)      (5.7 - 5.9 CD)
12. Go to the FILE pull down menu and select PROPERTIES
13. Clear the READ ONLY ATTRIBUTE - See errors section for result if this step isn't done
14. Exit the file manager
15. You now have a Standalone Raid Configuration Utility [RCU] floppy to upgrade RAID firmware.

#### **Windows NT**

Copy the appropriate files from CD-ROM to Floppy diskette on a PC or Alpha running Windows NT as described below.

1. Insert Firmware CD-ROM in drive
2. Insert formatted floppy diskette in drive A:
3. Select My Computer
4. Select CD-ROM drive in one window
5. Select Floppy drive in the other window
6. Select the directory \utility\swxcrmgr\ in cd window
7. Copy ALL files from the \utility\swxcrmgr\ directory to the floppy diskette except the Jensen directory, the .txt and the .lst files since there is not enough room on the floppy for them.  
     e.g. \utility\swxcrmgr\\*.\* to A:\  
     If you have the 3.5 or earlier CD the directory structure is as follows  
         \cdrom\utility\swxcrmgr\
8. Select all the files in the directory including the following firmware files.  
     swxcrfwa.216 (eisa)  
     swxcrfwp.236 (PCI)      (3.5 thru 3.8 CD)  
     swxcrfwp.242 (PCI)      (3.9 - 5.6 CD)  
     swxcrfwp.249 (PCI)      (5.2 - 5.6 CD)  
     swxcrfwp.270 (PCI)      (5.7 - 5.9 CD)
9. Go to the FILE pull down menu and select PROPERTIES
10. Clear the READ ONLY ATTRIBUTE - See errors section for result if this step isn't done
11. Close the floppy and CD window.
12. You now have a Standalone Raid Configuration Utility [RCU] floppy to upgrade RAID firmware

## Error if files on floppy are set read-only

This is an example of selecting firmware update with the file properties set to read-only.

```
Run A Program> A:swxcrfw swxcrfwa.216 EISA SWXCR
 A:RA200FL -v249 PCI SWXCR
```

```

* SWXCR Firmware Download Utility (V3.04, Mar 27, 1995) *

* This utility is used to upgrade the firmware on the *
* SWXCR controller. *

```

SWXCR controller supporting 7 targets per channel found at slot 1

Hit any key to proceed....

Current firmware version = 1.99

ERROR :

Failed to open, or encountered an error while reading the following files  
swxcrfwa.216  
The Current SWXCR controller cannot be programmed  
Press 'q' to quit this program or any other key to continue upgrading the  
firmware on other SWXCR controllers present in the system  
Failed to program the first SWXCR controller.

This is from Appendix D of the AlphaServer 2X00,2X00A release notes (with editing).

There are also rcu zip files located at CSC32::ISG\$COMMON:[SWXCR] called

```
STANDALONE_RAID_ARRAY_200_V3-2_FOR_AXP.ZIP;1
STANDALONE_RAID_ARRAY_200_V2-2_INTEL.ZIP;1
STANDALONE_RAID_ARRAY_200_V308_JENSEN.ZIP;1
STANDALONE_RAID_ARRAY_230_PLUS_V1-0A.ZIP;1
RAID_ARRAY_200_V2-1_FOR_WIN_NT_AXP.ZIP;1
RAID_ARRAY_200_V2-1_FOR_WIN_NT_INTEL.ZIP;1
RAID_ARRAY_200_V3-0_FOR_INTEL_NETWORK.ZIP;1
RAID_ARRAY_230_PLUS_RCU_V1-0A.ZIP;1
RAID_ARRAY_230_PLUS_V1-0_FOR_WIN_NT_ALP.ZIP;1
RAID_ARRAY_200_210_230_NT_DRIVERS.ZIP;1
```

Also look at CYBRARY at <http://Cybrary.inet.cpqcorp.net> for ECU and RCU zip files.



## **Running RCU Firmware Update on an AlphaServer 8200 / 8400**

### **WARNING!**

There is an issue with the firmware update utilities on the KZPSC and KZPAC SWXCR controllers when they are installed on AlphaServer 8200/8400 systems. See Blitz TD #2491 . Do NOT use RA200FL.EXE or SWXCRFW.EXE firmware update utilities from the V5.6 CD or earlier. There is a potential to corrupt the flash EEPROM and render the device unusable. You need to obtain a copy of RA200FL.EXE version 3.10A. The file will be available in .zip format on Cybrary. This file will also be available on the V5.7 Alpha Firmware CD and later. This version of the utility will allow you to safely upgrade firmware. It should also be available in the next revision of the RAID Array 230/Plus Subsystem Software Kit, V1.2A (QB-57UAA-SA) that is scheduled for an August 1998 release.

### **Overview**

Normally the Raid Configuration Utility (RCU) is run from the ARC or AlphaBIOS console. However on the AlphaServer 8200 and 8400 systems they can be started from the console prompt without first going to the ARC or AlphaBIOS menu. The utility can be run from floppy or CD. Depending on which floppy or CD you have the file names will change. You can only do a firmware update off floppy but you can check and change a RCU configuration if booted off of the CD. The original file names were SWXCRMGR.EXE, SWXCRFW.EXE and SRLMGR.EXE . As of the V3.9 CD the file names changed to RA200RCU.EXE, RA200FL.EXE and RA200SRL.EXE. If using the floppy it will be connected off of the KFE70 or KFE72.

### **Utility Filename Definitions**

#### **Filenames used up to the V3.8 CD**

|              |                                                   |
|--------------|---------------------------------------------------|
| SWXCRMGR.EXE | Standalone SWXCRMGR utility                       |
| SWXCRFW.EXE  | SWXCR firmware update utility (see Warning above) |
| SRLMGR.EXE   | SWXCR Serial utility                              |

#### **Filenames used from the V3.9 CD and later**

The utility filenames changed as of the V3.9 CD. For some methods to work you may need to rename files to old names.

|              |                                                   |
|--------------|---------------------------------------------------|
| RA200RCU.EXE | Standalone SWXCRMGR utility                       |
| RA200FL.EXE  | SWXCR firmware update utility (see Warning above) |
| RA200SRL.EXE | SWXCR Serial utility                              |

### **Firmware Filenames Definitions**

The firmware and EISA configuration files as of the V5.2 Alpha Systems Firmware Update CD are as follows

|              |                                                                                  |
|--------------|----------------------------------------------------------------------------------|
| SWXCRFWP.242 | KZPAC/KZPSC PCI SWXCR firmware version 2.42                                      |
| SWXCRFWP.249 | KZPAC/KZPSC PCI SWXCR firmware version 2.49 - Required for SWCC support          |
| SWXCRFWP.270 | KZPAC PCI SWXCR firmware version 270                                             |
| SWXCRFWA.216 | KZESC EISA SWXCR firmware version 2.16                                           |
| !MLX0075.CFG | Windows NT EISA configuration file for the 3 channel EISA raid controller.       |
| !MLX0077.CFG | Windows NT EISA configuration file for the 1 channel EISA raid controller        |
| AMLX0075.CFG | VMS/Digital UNIX EISA configuration file for the 3 channel EISA RAID controller. |
| AMLX0077.CFG | VMS/Digital UNIX EISA configuration file for the 1 channel EISA RAID controller. |

## Procedure

### Terminal Setup

For correct operation you must use a VT320 or greater and the terminal characteristics should be set as follows:

- Set to VTxxx Mode, 8 Bit Controls ( If you do not set 8-bit controls the arrow keys will not work)
- Set terminal ID to one of the following: VT300, VT320, VT330, VT420
- Set to No Cursor mode or Text Cursor Invisible (Display setup) depending on the terminal type.
- Set the terminal to 9600 baud, 8-bits, no parity
- Set the ' ~ key' to equal **ESC** or use ' **Ctrl [** ' (the Ctrl key should be held down while the ' [ ' key is pressed).

### Console Setup

- Set the console to advanced mode. There is a variable called Console\_mode. Console\_mode will define the setting of mode on power up or init. It will override the SET MODE value on init.

```
P00>>> set console_mode advanced
```

```
P00>>> set mode advanced - will change to equal setting of console_mode if
 machine is init'd
```

```
Console is in advanced mode
```

- Set the environmental variable ARC\_ENABLE to ON  
P00>>> set arc\_enable on
- Set the console to serial (VT) or graphics (AlphaBIOS).  
P00>>> Set console serial  
or -  
P00>>> Set console graphics
- Init the machine  
P00>>> init

### How to run RCU from a serial console

#### Floppy

1. There are several console variables on the system that are preset. You will see them if ARC\_ENABLED is set to ON.
2. Show the RCU variable.  
P00>>> sho rcu  
RCU fat:srlmgr.exe
3. Show the SWXCRCFW and SXCRMGR variable to see how they are set. Note the later is misspelled.  
P00>>> show SWXCRCFW  
SWXCRCFW fat:swxcrcfw.exe  
P00>>> show SXCRMGR  
SXCRMGR fat:sxcrmgr.exe
4. To see what files are located on the floppy do the following.  
P00>>> load fat - Load the FAT (floppy) driver  
P00>>> show device floppy  
polling for units on floppy0, slot 0, bus 1, hose1...  
dva0.0.0.1100.1 DVA0 RX26/RX23
5. P00>>> ls fat:\*/dva0 - get directory of floppy  
'fat:SWXCRCFW.EXE/dva0.0.0.1100.1'  
'fat:\_MLX0077.CFG/dva0.0.0.1100.1'  
'fat:00README.1ST/dva0.0.0.1100.1'

```
'fat:AMLX0075.CFG/dva0.0.0.1100.1'
'fat:AMLX0077.CFG/dva0.0.0.1100.1'
'fat:REL.TXT/dva0.0.0.1100.1'
'fat:SRLMGR.EXE/dva0.0.0.1100.1'
'fat: MLX0075.CFG/dva0.0.0.1100.1'
'fat:SWXCRFWA.216/dva0.0.0.1100.1'
'fat:SWXCRFWP.242/dva0.0.0.1100.1'
'fat:SWXCRMGR.EXE/dva0.0.0.1100.1'
```

6. If the filename on floppy matches the environmental variables RCU or SWXCRFW you can use them.  
P00>>> **run rcu -p 1** or you can specify a file  
          -p 1 - specifies the PCI bus (hose) where the swxcr is  
          installed (i.e. 0,1,2,3)
7. If the filenames on floppy do NOT match the environmental variables you can either rename the files on floppy to match the variables, reset to environmental variables to match the filenames on floppy or just specify the filename as it is on the floppy.  
P00>>> **run fat:ra200srl.exe -p 1** - loads the serial RCU from floppy.
8. Use **ESC** or **Ctrl [** to exit utility when done

## CD

1. Insert the system firmware CD in the local CDROM
2. Run the RCU utility from the console with one of the following commands.  
P00> **run iso9660:[utility.swxcrmgr]ra200srl.exe -d dkd400 -p 0**  
(V3.9 CD and later)  
  
P00> **run iso9660:[utility.swxcrmgr]srlmgr.exe -d dkd400 -p 0**  
(V3.6 CD - V3.8 CD)  
  
P00> **run iso9660:[cdrom.utility.swxcrmgr]srlmgr.exe -d dkd400 -p 0**  
(V3.5 CD and earlier)  
          -d dkd400 - specifies the CDROM device. Without this it will  
          default to DVA0.  
          -p 0 - specifies the PCI bus (hose) where the swxcr is  
          installed (i.e. 0,1,2,3)
3. Use **ESC** or **Ctrl [** to exit utility when done

## How to run RCU from a graphics console (AlphaBIOS)

### Floppy

1. Enter the AlphaBIOS menu by typing ARC at the P00>>> prompt.
2. Enter setup by typing function key F2
3. Select Utilities and Run Maintenance Program
4. At Program name type the program you want to run. You do not need the .exe extension but it works if you use it.  
  
Program Name: **ra200rcu**  
                  **swxcrmgr**
5. At Location select from the table where files are located. A: or CD:  
Location: **A:**
6. Press Enter and files will load.
7. Use **ESC** or **Ctrl [** to exit utility when done

## CD

1. Enter the AlphaBIOS menu by typing ARC
2. Enter setup by typing function key **F2**
3. Select Utilities and Run Maintenance Program
4. At Program name type the program you want to run. You do not need the .exe extension but it works if you use it.

Program Name: `\utility\swxcrmgr\ra200rcu.exe` - V3.9 CD and later  
`\utility\swxcrmgr\swxcrmgr` - V3.6 thru V3.8 CD and earlier  
`\cdrom\utility\swxcrmgr\swxcrmgr.exe` - V3.5 CD and earlier

5. At Location select from the table where files are located. A: or CD:  
Location: **CD:**
6. Press Enter and files will load.
7. Use ESC or Ctrl [ to exit utility when done

## How to Update Firmware from floppy

You can only update firmware from floppy. Below is the procedure to do the update from the serial or graphics console.

The following files are used for firmware updates only.

- ra200fl - (Need new version or RA200FL.EXE - see Warning above)
- swxcrfw - (Only valid if you get new RA200FL.EXE and rename it - see Warning above)

### Warning!

Please see warning at top of page before proceeding with this step. Failure to do so may corrupt the SWXCR EPROM's.

## Serial Console

Using a floppy with the firmware update utility RA200FL.EXE version 3.10A.

1. Locate the new firmware update utility from one of the following places.

- Alpha Systems Firmware Update V5.7 CD or later
- RA200FL.EXE version 3.10A located on Cybrary in the SWXCR\_FW\_PCI\_and\_EISA.zip file at

<http://Cybrary.inet.cpqcorp.net/DOWNLOAD/FIRMWARE/STORAGE/SCSI/ADAPTERS/DEC/#SWXCR>

- RAID Array 230/Plus Subsystem Software Kit, V1.2A  
QB-57UAA-SA - August 1998.
2. Copy the new RA200FL.EXE file to floppy. See How to build an RCU floppy for entire procedure to build floppy.
  3. Copy the specific SWXCR firmware files to the floppy depending on your adapter type..
  4. Load the update utility with the following command.  
P00>>> `run fat:ra200fl.exe -d dva0 -p 1 -s "swxcrfw.249"`  
-d dva0 - Specifies floppy device to load from. May not be necessary.  
-p 1 - specifies the PCI bus (hose) where the swxcr is installed  
(i.e. 0,1,2,3)  
-s "parameter string" - firmware file to load (must be enclosed in quotes).

You can specify up to four filenames to do multiple controllers.

P00>>> `run fat:ra200fl.exe -d dva0 -p 1 -s "swxcrfw.249 swxcrfw.249"`  
Updates first 2 PCI swxcr controllers on hose 1 with firmware



version 2.49 .

5. Press ENTER to proceed with the updates.
6. The update utility will start and allow you to update the swxcr's.
7. Reset the system and reset system environment. See "When you are done" below.

**Use floppy with firmware update utility RA200FL.EXE V3.10A renamed to SWXCRFW.EXE**

1. Copy the RA200FL.EXE V3.10A file to floppy and rename it SWXCRMGR.EXE. See section above for locations.  
See How to build an RCU floppy for entire procedure to build floppy.
2. Copy the specific SWXCR firmware files to the floppy depending on your adapter type..
3. Show the SWXCRFW environmental variable to see how it is set.  
P00>>> **show SWXCRFW**  
SWXCRFW fat:swxcrfw.exe
4. There are several commands that you can use to update the SWXCR.  
**run swxcrfw -p 1 -s "swxcrfw.249"**  
-d dva0 - Specifies floppy device to load from. May not be necessary.  
-p 1 - specifies the PCI bus where the swxcr is installed (0,1,2,3)  
-s "parameter string" - firmware file to load (must be enclosed in quotes).

You can specify up to four filenames to do multiple controllers.

**run swxcrfw -p 1 -s "swxcrfw.249 swxcrfw.249"**

Updates first 2 PCI swxcr controllers on hose 1 with firmware version 2.49.

5. Press ENTER to proceed with the updates
6. The update utility will start and allow you to update the swxcr's.
7. Reset the system and reset system environment. See "When you are done" below.

**Note:**

The -v option is not available when running RA200FL from the SRM console at this time. The documentation lists the -v 249 command but it is not used if you supply it. If you use -v please note there is a space between the -v and 249 version number.

**Graphics Console**

1. Build the RCU floppy. See How to build an RCU floppy for entire procedure to build floppy.
2. Enter the AlphaBIOS menu by typing ARC at the P00>>> prompt.
3. Enter setup by typing function key **F2**
4. Select Utilities and Run Maintenance Program

5. At Program name type the program you want to run  
Program Name: **ra200fl -v249** - This will update all controllers. There is NO space between the -v and 249,

To specify specific controllers to update use the following format.

Program Name: **ra200fl www xxxx yyyy zzzz**

www is filename to load on first controller i.e. swxcrfwp.249

xxxx is filename to load on second controller

yyyy is filename to load on third controller

zzzz is filename to load on fourth controller

To Update the first, third and fourth controllers but not the second use to command.

Program Name: **ra200fl swxcrfwp.249 xxxx swxcrfwp.249 swxcrfwp.249**

6. At Location select from the table where files are located. A:  
Location: **A:**
7. Press Enter and the files will load and it will select and update the controllers of that type you specified.
8. The update utility will start and allow you to update the swxcr's.
9. Reset the system and reset system environment. See "When you are done" below.

#### When you are done

1. When you are finished with RCU use ESC or ' CTRL [ ' to exit the utility.
2. Reset any environmental variables back to original settings. i.e. Console , Console\_mode, Arc\_enable  
P00>>> **set console\_mode basic**  
P00>>> **set arc\_enable off**  
P00>>> **init**
3. Reset terminal setting back to original settings.

## **EISA Configuration Utility (ECU) Commands**

### **Using the EISA Configuration Utility**

Whenever you add, remove, or move an EISA or ISA module in your system, you need to run the EISA configuration utility (ECU). The ECU is a menu-based utility, run from the ARC menu interface, that provides on-line help to guide you through the configuration process.

Each EISA or ISA module has a corresponding configuration file (CFG), which describes the characteristics and the system resources required for that option. The ECU uses the CFG to create a conflict-free configuration.

The ECU is supplied on a diskette that is shipped with your system. Make a copy of the ECU diskette, and keep the original in a safe place. Use the backup copy when you are configuring the system. The ECU diskette must have the volume label SYSTEMCFG.

#### **NOTE**

The CFG files supplied with the option you want to install may not work if the option is not supported on this system. Before you install an option, check that your system supports the option.

### **Before You Run the ECU**

#### **CAUTION**

Make sure the system is turned off before you install options

1. Refer to the documentation that comes with your option module to determine if it is an EISA or ISA option.
2. Install EISA options. (You install ISA options after you run the ECU.) For information about installing a specific option, refer to the documentation for that option.
3. Familiarize yourself with the utility.  
You can find more information about the ECU by reading the ECU on-line help. To read the online help, start the ECU. On-line help for the ECU is located under Step 1, Important EISA Configuration Information.
4. Familiarize yourself with the configuration procedure for your system:  
If you are installing, moving, or removing an EISA option, refer to the section on Configuring EISA Options.  
If you are installing, moving, or removing an ISA option, refer to the section on Configuring ISA Options.
5. The ECU diskette is shipped in the accessories kit that accompanies your system. Make a copy of the diskette and keep the original in a safe place. Use the backup copy for configuring options.

### **Configuring EISA Options**

EISA options are recognized and configured automatically. To configure an EISA bus that contains no ISA options, follow these steps:

1. Install, move, or remove the EISA option module.  
Use the instructions provided with the EISA option.
2. Invoke the console firmware.  
For systems running Windows NT:  
Shut down the operating system or power up to the console Boot menu.  
For systems running Tru64 UNIX or OpenVMS:  
Shut down the operating system and press the Halt switch. When the console prompt >>> is displayed, invoke the ECU, as described in Step 3.

3. Invoke the ECU as follows:

For systems running Windows NT:

- a. From the Boot menu, select the Supplementary menu.
- b. From the Supplementary menu, select the Setup menu. Insert the ECU diskette for Windows NT into the diskette drive.
- c. From the Setup menu, select "Run EISA configuration utility from floppy." This initializes the ECU program. There may be a 10- to 20-second delay in system activity while the system recognizes the ECU.

For systems running Tru64 UNIX or OpenVMS:

- a. Insert the ECU diskette for Tru64 UNIX or OpenVMS into the diskette drive.
- b. Enter the ecu command.  
The message loading ARC firmware displays. There may be a 10- to 20-second delay in system activity while the system recognizes the ECU.

When the firmware has finished loading, the ECU program is initialized. If the ECU locates the required CFG configuration files, it displays the main menu. The CFG for the option may reside on a configuration diskette packaged with the option or may be included on the system configuration diskette.

NOTE

It is not necessary to run Step 2 of the ECU, Add or remove boards. EISA modules are recognized and configured automatically.

4. Change settings or resources (optional).

This step is not required when you are using the board's default settings.

The View or Edit Details ECU option is used to change user-selectable settings or to change the resources allocated for these functions (for example, IRQs, DMA channels, and I/O ports).

5. Save your configuration.

The Save and Exit ECU option saves your configuration information to the system's NVRAM.

6. Return to the SRM console (Tru64 UNIX and OpenVMS systems only) and restart the system.

For systems running Windows NT:

Remove the ECU diskette from the diskette drive and initialize the operating system.

For systems running Tru64 UNIX or OpenVMS:

Return to the SRM console, as follows:

- a. From the Boot menu, select Supplementary menu.
- b. From the Supplementary menu, select Set up the system menu.
- c. From the Setup menu, select Switch to OpenVMS or Tru64 UNIX console.
- d. From your operating system; then press Enter on the Setup menu.
- e. When the message Power-cycle the system to implement the change is displayed, press the Reset button. Do not press the On/Off switch. After the console firmware is loaded and device drivers are initialized, can boot the operating system.

## Configuring ISA Options

To configure ISA options, follow these steps:

1. Start up the system and run the ECU.
2. Add the ISA card configuration file to the configuration list.

Use the Add or Remove Boards ECU option to add the configuration file (CFG) for the ISA option and to select an acceptable slot for the option.

In some cases, the CFG file for the ISA option may reside on a configuration diskette packaged with the option. If so, insert that diskette and follow its directions.

For most ISA options, the CFG is not on a diskette. If it is not, you need To use the generic ISA adapter definition option on the ECU diskette.

3. Change settings or resources (optional).

The View or Edit Details ECU option is used to change user-selectable Settings or to change the resources allocated for these functions (for example, IRQs, channels, and I/O ports).

This step is not required when you are using the board's default settings.

4. Examine and set required switches to match the displayed settings.
5. Save your configuration.  
The Save and Exit ECU option saves your configuration information to the system's NVRAM.
6. Return to the SRM console (Tru64 UNIX and OpenVMS systems only) and restart the system.

For Systems running Windows NT:

Remove the ECU diskette from the drive and initialize the operating system.

For systems running Tru64 UNIX or OpenVMS:

Return to the SRM console, as follows:

- a. From the Supplementary menu, select Setup menu.
  - b. From the Setup menu, select Switch to OpenVMS or Tru64 UNIX console.  
This option allows you to select your operating system console.
  - c. Select your operating system; then press Enter on the Setup menu.
  - d. When the message Power-cycle the system to implement the change is displayed, press the Reset button. Do not press the On/Off switch.  
After the console firmware is loaded and device drivers are initialized, You can boot the operating system.
7. Install the ISA module and turn on the system.

Use the instructions provided with the ISA option.



## Procedure to Update CIXCD with 4K Packet Firmware

### **NOTE**

See Blitz 2919 if using CIXCD with 4K packet firmware.  
Problems have been discovered under heavy load.

### Overview

Firmware that supports 4K CI packet transmissions for the CIXCD is qualified and available. The firmware is available on the 5.6 firmware CD but it cannot be loaded using the normal console update procedures (for either VAX or Alpha). In order to support 4K Ci packet transmission you must have the correct firmware loaded.

Both non-4K and 4K packet firmware will be included with future firmware CD releases (including CIXCD firmware for VAX). Non-4K firmware will be loaded by default when system firmware is updated. Care must be taken to reload the 4K firmware manually if necessary.

There are four CI interfaces that transmit data in 4K packets: CIXCD, CIPCA, HSJ50 and HSJ80. 4K packet transmissions can only occur between these options. The CIXCD 4K packet firmware should be loaded and 4K packet transmissions enabled on these buses.

### Restrictions

CIBCA-BA, HSJ40, HSC40, HSC70, HSC60, HSC65, HSC90 or HSC95 devices do not transmit 4K packets but are unaffected by 4K packet transmissions from other devices. Loading the CIXCD 4K packet firmware and enabling 4K packet transmissions will have no impact on these devices.

4K Packet transmissions are not allowed on CI rails with a HSC50, CIBCA-AA, CI750 or CI780 connected. Therefore do not load the CIXCD 4K packet firmware and do not enable HSJxx 4K packet transmissions on CI rails containing these devices.

### Different Files Required to do the Update

| <b>Platform</b> | <b>4k packet ver.</b> | <b>non-4k packet ver.</b>     |
|-----------------|-----------------------|-------------------------------|
| VAX6000/9000    | cixcdv69.bin          | cixcdv49.bin                  |
| VAX7000         | cixcdv69.sys          | cixcdv49.sys                  |
| DEC7000         | cixcdd27.sys          | (loaded automatically by LFU) |
| AS8400/GS140    | cixcdg27.sys          | (loaded automatically by LFU) |

**NOTE:** If FTP is used to get the different cixcd.sys files to the system, ensure that you are in binary mode when you do the transfer. Also, if your FTP process goes through a UNIX system somewhere, the file should be zipped first.

### Update Procedures

#### **AlphaServer 8x00 and GS Series Machines**

There are references in other places (including the updating\_firmware.txt file on the 5.6 cd in the cixcd directory) to a method of updating directly from the firmware CD. To our knowledge, this procedure has not been executed successfully.

Use the following procedures to do a MOP load from another system on the network.

1. Mount the CDROM using the command  
**\$ mount/media=cd/over=id \$1\$DKxnnn**  
(The /media switch is required to access the necessary files)

You can also access the files over the web at the firmware website.

- Copy the appropriate firmware file to MOM\$LOAD or MOM\$SYSTEM on a node in the cluster that has service enabled with the following command  
\$ **copy \$1\$DKxnnn:[cixcd]cixcdg27.sys mom\$load** or  
\$ **copy \$1\$DKxnnn:[cixcd]cixcdg27.sys mom\$system**

**Note:** The 'updating\_firmware.txt' file in the CIXCD directory of the firmware CD refers to the wrong file name of cixcd\_v27\_t1

- Make sure service is enable on a node in the cluster.
- On the system being updated you must enter the LFU utility by typing LFU at the >>>. The following update command must be customized for each configuration. It is necessary to select both the specific adapter to update and appropriate ethernet adapter in the command line.

P00>>>lfu

\*\*\*\*\* Loadable Firmware Update Utility \*\*\*\*\*

Select firmware load device (cda0, dva0, ewa0), or  
Press <return> to bypass loading and proceed to LFU: **<return>**

| Function  | Description                                                     |
|-----------|-----------------------------------------------------------------|
| Display   | Displays the system's configuration table.                      |
| Exit      | Done exit LFU (reset).                                          |
| List      | Lists the device, revision, firmware name, and update revision. |
| Lfu       | Restarts LFU.                                                   |
| Readme    | Lists important release information.                            |
| Create    | Make a custom Console Grom Image.                               |
| Update    | Replaces current firmware with loadable data image.             |
| Verify    | Compares loadable and hardware images.                          |
| ? or Help | Scrolls this function table.                                    |

#### WARNING

Before upgrading the "ARC" (AlphaBIOS) section of the console, make sure that the HAL.DLL on WNT boot disk is compatible with the "ARC" section of the console.

See release notes for details.

-----  
Console ARC firmware ARCROM not found  
Console firmware kn7cc\_fw not found

UPD> **update cixcd0 -path mopdl:cixcdgv27/ewa0**

#### DEC7000/10000

A MOP load from another system in the network is required. The firmware must be copied to the mom\$system or mom\$load directory on that node.

On the system containing the update CD execute the following:

- Mount the CD on an existing node in the cluster.  
\$ **mount/media=cd/over=id \$1\$DKxnnn**  
(The /media switch is required to access the necessary files)
- Copy the correct cixcdd27.sys file to the MOM\$LOAD or MOM\$SYSTEM.  
\$ **copy \$1\$DKxnnn:[cixcd]cixcdd27.sys mom\$system** or  
\$ **copy \$1\$DKxnnn:[cixcd]cixcdd27.sys mom\$load**

**Note:** The 'updating\_firmware.txt' file in the CIXCD directory of the firmware CD



refers to the wrong file name of cixcd\_v27\_tl

3. Ensure circuit service is enabled for this particular circuit. Have the system manager enable this if not.
4. On the system being updated execute the following console command  
P00>>> **boot -fl 0,0 -fi CIXCDD27 exa0**  
**VAX7000/10000**

A MOP load from another system in the network is required. The firmware must be copied to the mom\$system or mom\$load directory on that node.

On the system containing the update CD execute the following:

1. Mount the CD on an existing node in the cluster.  
\$ **mount/media=cd/over=id \$1\$DKxnnn**  
(The /media switch is required to access the necessary files)
2. Copy the correct cixcdv69.sys file to the MOM\$LOAD or MOM\$SYSTEM.  
\$ **copy \$1\$DKxnnn:[cixcd]cixcdv69.sys mom\$system** or  
\$ **copy \$1\$DKxnnn:[cixcd]cixcdv69.sys mom\$load**

**Note:** The 'updating\_firmware.txt' file in the CIXCD directory of the firmware CD refers to the wrong file name of cixcd\_v27\_tl

3. Ensure circuit service is enabled for this particular circuit. Have the system manager enable this if not.
4. On the system being updated execute the following console command  
P00>>> **boot -fl 0,0,0 -fi CIXCDv69 exa0**

#### **VAX6000 and VAX9000**

The VAX diagnostic supervisor must be used to load the cixcd firmware on these platforms. The file is in the same directory on the firmware cd as for the other platforms, i.e. \$1\$dka500:[cixcd]cixcdv69.bin. This file must be moved to the same directory as the diagnostic supervisor. Each system has a different diagnostic supervisor.

- VAX9000 - EWSAA
- VAX6600 - EXSAA
- VAX6500 - EMSAA
- VAX6400 - ERSAA
- VAX6200/6300 - ELSAA

1. Boot the diagnostic supervisor.

```
VAX 9000 >>> Boot VDS
VAX 6x00 Set bit 4 in the correct boot string.
```

2. At the DS> prompt run autsosizer and select all  
DS> set quick,trace  
DS> **run evsba/section:self**  
COMMAND? **size**  
DS> **select all**

3. Start the CI diagnostic evgea and select update.  
DS> **run evgea/section:update**  
The current CIXCD XMI node number is 0C  
Input the CIXCD BINARY filename to use [default= CIXCD.BIN]: **cixcdv69.bin**



## **KGPSA Files Used for Firmware Updates**

KGPSA firmware is available in several different formats to allow for updating firmware when the adapter is installed on different platforms. These filenames are subject to change with each new version of firmware.

For a list of available firmware see the Cybrary download area.

Successful updates may require renaming the files to be eight characters or less.

1. Firmware loaders with the KGPSA firmware embedded.
  - AL381a4.exe            LP8000 loader and firmware version 3.81a4 embedded
  - AL303x2.exe           LP8000 loader and firmware version 3.03x2 embedded
  - lp8ldr                LP8000 with firmware embedded
  - lp7ldr                LP7000 with firmware embedded
  - lp6ldr                LP6000 with firmware embedded
  - 303a1ldr.exe          LP8000 loader and firmware version 3.03a1 embedded
  - lp7303a1ldr.exe      LP7000 loader and firmware version 3.03a1 embedded
2. Firmware loaders that require a firmware .awc update file to be provided
  - alphdnld.exe
3. Firmware .awc files require the use of the alphdnld.exe loader.
  - dd381a4.awc           LP8000 KGPSA-CA V3.81a4 firmware
  - dd303x2.awc           LP8000 KGPSA-CA V3.03x2 firmware
  - sf303a1.awc           LP7000 KGPSA-CA V3.03a1 firmware
  - dd303a1.awc           LP8000 KGPSA-CA V3.03a1 firmware
4. Firmware .sys files used on WildFire. Requires booting Wildfire firmware files first (LFU).
  - dd381a4.awc           LP8000 KGPSA-CA V3.81a4 firmware
  - dd303x2.awc           LP8000 KGPSA-CA V3.03x2 firmware
  - KG8303A1.SYS          LP8000 firmware version 3.03a1
  - KG7303A1.SYS          LP7000 firmware version 3.03a1
5. GS80/GS160/GS320 firmware update CD created from .iso file
  - GS320\_V59B1.ISO      V5.9B firmware CD with KGPSA V3.81a4 firmware included



## **Upgrading KGPSA Firmware on GS80/GS160/GS320 Machines**

### **CAUTION!**

The solution mentioned in Blitz TD2831 is now available in the Download directory on Cybrary. See the readme files before proceeding with an update.

UNIX requires EMX driver V1.29 with firmware 381a4.

UNIX requires EMX driver V1.22 with firmware 303a1 or later. VMS requires patches to be installed. See Blitz TD2807-C for details

### **Overview**

KGPSA firmware for the GS80/GS160/GS320 series systems is embedded within the LFU utility. When a newer version of firmware is available, it may not be available on the firmware update CD. The following procedure addresses how to update the KGPSA in those cases. The current version of KGPSA firmware being shipped with the V5.9b firmware is 381a4. This version addresses the issues discussed in Blitz TD2831.

Newer version of the firmware are available with the .awc extension. Older versions are available with a .sys extension. These files are compatible and can be renamed to either extension.

### **Firmware Files Available**

|                 |                                                               |
|-----------------|---------------------------------------------------------------|
| dd381a4.awc     | (LP8000 381a4)                                                |
| dd303x2.awc     | (LP8000 303x2)                                                |
| KG7303A1.SYS    | (LP7000 303a1)                                                |
| GS320_V59B1.ISO | (V5.9B ISO image with LP8000 3.81a4 (makes a bootable CDROM)) |

### **Creating a CDROM**

A firmware update CD can be created. The following procedure describes making a CDROM with the firmware that corrects the issues described in Blitz TD2831. The filenames are subject to change with later releases of the firmware. The procedure described uses Adaptec Easy CD Writer Software. The actual navigation will be different with different CDROM software. It is imperative that the file system type be set to ISO9660 and the MODE set to Single Session.

#### **To create a CD with the Option firmware Only.**

1. Save the file DD381A4.AWC on a system with a CD-RW installed.
2. Using the Adaptec Easy CD Writer Software perform the following:
  - Select CD Layout properties from File Pulldown
  - In General Tab select the following:
    - File system: ISO9660
    - Mode: Mode 1 CDROM (single session)
  - Save the settings
  - Move both files and options folder to be copied to CD Layout window
  - Click on Create CD
  - Select 4x speed
  - Select number of copies
  - Create CD

### To Create a CDROM using the Firmware .ISO file

1. Copy the V5.9b .iso firmware file to your PC.
2. Use CD writer software, write this image file to a blank CD. When writing the CD, ensure that the "close disk" or equivalent option is selected.

### Updating KGPSA Firmware

1. Obtain the specific KGPSA firmware.sys or .awc file. It can be obtained from Cybrary or from Engineering. Create a CDROM using the method above. The .awc file can be renamed to .sys on this platform.
2. Obtain a bootable Wildfire firmware CD or create a CD using the .iso firmware file from the Alpha Systems Firmware interim website. V6.0 firmware is the current version as of May 14,2001. There are also firmware .iso files at the Engineering Wildfire page. Versions V5.6 thru V6.0 are available.
3. Boot the LFU from CD.
4. At the update prompt, replace the LFU firmware CD with the KGPSA firmware CD created in step 1.
5. Load the KGPSA firmware using one of the following commands. To load firmware off of a CD specify iso9660 for the CDROM and any directory structure there may be.

```
UPD> update pga0 -path iso9660:[options]dd381a4.awc/dqa0
 (load fw V3.81-A4 from the options folder on the CDROM)
```

or

```
update pga0 -path iso9660:kg7303a1.sys/dqa0
 (load fw V3.03-A1 from the top level directory of the CDROM)
```

6. After the update completes, type exit and reset the system.

### Example

```
P00>>>b dqa0
 (boot dqa0.0.0.15.16 -flags A)
 block 0 of dqa0.0.0.15.16 is a valid boot block
 reading 1082 blocks from dqa0.0.0.15.16
 bootstrap code read in
 base = 41e000, image_start = 0, image_bytes = 87400
 initializing HWRPB at 2000
 initializing page table at bffe4000
 initializing machine state
 setting affinity to the primary CPU
 jumping to bootstrap code
```

```

+ June 2000
+ Compaq AlphaServer GS80/160/320 Firmware +
+ README-First !!! +
+-----
```

#### 1. Latest Firmware Update Revisions

The Firmware Update Bootfile "GS320\_V56.EXE" on the AlphaServer GS80/160/320 Firmware CD V5.6, contains the initial shipping revisions of the firmware, which has been fully qualified for use on GS160 Systems and on Partitioned GS320 Systems with partitions containing no more than four QBBs. (There is also latent firmware support for GS80 Systems, non-partitioned GS320 Systems, and for all other valid GS320 configurations, although these have not been

fully qualified yet).

The V5.6 firmware package has the following components :

| Component   | Location of Flash ROM<br>Where Firmware Resides | Firmware Revision |
|-------------|-------------------------------------------------|-------------------|
| -----       | -----                                           | -----             |
| SRM Console | SRM Flash (on STDIO)                            | V5.8-1            |

Hit <RETURN> to scroll text, or <CTRL/C> to skip text.

|              |                      |                     |
|--------------|----------------------|---------------------|
| VMS PALcode  | SRM Flash (on STDIO) | V1.81-1             |
| UNIX PALcode | SRM Flash (on STDIO) | V1.75-1             |
| ISP10x0 FW   | SRM Flash (on STDIO) | V5.57               |
| XSROM        | PSM Flash            | V05.6 (05.31/05:03) |
| SCM Micro FW | SCM Flash (on STDIO) | V05.6 (05.31/02:23) |
| PSM Micro FW | PSM Flash            | V05.6 (05.31/02:11) |
| PBM Micro FW | PBM Flash            | V05.6 (05.31/02:16) |
| HPM Micro FW | HPM Flash            | V05.6 (05.31/02:20) |

For completeness, the following table lists the current revision of the SROM code, which resides in non-flashable ROM on the CPU modules in the system, and is NOT updateable via the firmware update program :

| Component | Location of ROM Where<br>Firmware Resides | Firmware Revision |
|-----------|-------------------------------------------|-------------------|
| -----     | -----                                     | -----             |
| SROM FW   | Serial ROM on CPU                         | V6.0-7            |

The update bootfile also contains the following PCI I/O Adapter firmware revisions :

Hit <RETURN> to scroll text, or <CTRL/C> to skip text.

| Adapter | HW Variant   | Firmware Revision |
|---------|--------------|-------------------|
| -----   | -----        | -----             |
| CIPCA   | All variants | 4.20              |
| DEFPA   | All variants | 3.20              |
| KGPSA * | -BC          | SS2.20X2          |
| KGPSA   | -CA          | DS3.02A1          |
| KZPSA * | All variants | A12               |

\* NOTE: Although the update program contains firmware images for KGPSA-BC and KZPSA, those adapters are NOT officially supported on GS80/160/320 Systems. Also note that CCMAB (Memory Channel) IS supported, but firmware update support is not currently provided or needed.

## 2. Firmware Enhancements and New Features

This is the initial shipping release of the Firmware, for use on AlphaServer GS160 Systems.

## 3. Firmware Restrictions and Workarounds

Hit <RETURN> to scroll text, or <CTRL/C> to skip text.

For a complete list of firmware restrictions and workarounds, consult the AlphaServer GS80/160/320 Firmware Release Notes on this Firmware CD.

## 4. AlphaServer GS80/160/320 Firmware V5.6 Release Notes

If you wish to read the complete Firmware Release Notes for the AlphaServer GS80/160/320, they can be found on this Firmware

CD, in the file named :

```
\GS320\GS320_V56_FW_RELNOTE.PS (PS file)
\GS320\GS320_V56_FW_RELNOTE.PDF (PDF file)
\GS320\GS320_V56_FW_RELNOTE.TXT (Text file)
```

-----  
Hit <RETURN> to scroll text, or <CTRL/C> to skip text.

The default bootfile for this platform is

**[GS320]GS320\_V56.EXE**

Hit <RETURN> at the prompt to use the default bootfile.

Bootfile: <cr>

OpenVMS PALcode V1.81-1, Tru64 UNIX PALcode V1.75-1

```
system = QBB 0 (Hard Partition 2)
 QBB 0 = CPU 0 2 + Mem 0 2 + Dir + IOP + PCA 0 1 + GP (Hard QBB 2)
micro firmware version is V5.6
shared RAM version is 1.4
hose 16 has a standard I/O module
starting console on CPU 0
initialized idle PCB
initializing semaphores
initializing heap
initial heap 300c0
memory low limit = 8ae000
heap = 300c0, 1ffc0
initializing driver structures
initializing idle process PID
initializing file system
initializing timer data structures
lowering IPL
CPU 0 speed is 731 MHz
create dead_eater
create poll
create timer
create powerup
access NVRAM
QBB 0 memory, 3 GB
total memory, 3 GB
probe I/O subsystem
probing hose 16, PCI
probing PCI-to-PCI bridge, bus 2
probing PCI-to-ISA bridge, bus 1
bus 1, slot 0 -- dva -- Floppy
bus 0, slot 1 -- pka -- QLogic ISP10x0
bus 2, slot 4 -- eia -- DE602-AA
bus 2, slot 5 -- eib -- DE602-AA
bus 0, slot 15 -- dqa -- Acer Labs M1543C IDE
probing hose 17, PCI
bus 0, slot 4 -- fwa -- DEFPA
bus 0, slot 6 -- pua -- CIPCA
bus 0, slot 7 -- pkb -- QLogic ISP10x0
probing hose 18, PCI
bus 0, slot 1 -- mca -- DEC PCI MC
probing hose 19, PCI
bus 0, slot 5 -- pga -- KGPSA-B
bus 0, slot 6 -- pgb -- KGPSA-B
bus 0, slot 7 -- pkc -- QLogic ISP10x0
starting drivers
entering idle loop
initializing GCT/FRU at 8ae000
initializing pka pkb pkc fwa dqa eia eib pga
Checking dqa0.0.0.15.16 for the option firmware files. . .
```



```

Copying DFXAA320 from dqa0.0.0.15.16. . .
Copying KZPSAA12 from dqa0.0.0.15.16. . .
Copying CIPCA420 from dqa0.0.0.15.16. . .
Copying KG8302A1 from dqa0.0.0.15.16. . .
Copying KG7220X2 from dqa0.0.0.15.16. . .

```

LFU micro updates are not supported when the system is hard partitioned.  
Please power down and unpartition first.

\*\*\*\*\* Loadable Firmware Update Utility \*\*\*\*\*

| Function  | Description                                                     |
|-----------|-----------------------------------------------------------------|
| Display   | Displays the system's configuration table.                      |
| Exit      | Done exit LFU (reset).                                          |
| List      | Lists the device, revision, firmware name, and update revision. |
| Update    | Replaces current firmware with loadable data image.             |
| Verify    | Compares loadable and hardware images.                          |
| ? or Help | Scrolls this function table.                                    |

UPD> list

| Device | Current Revision | Filename    | Update Revision |
|--------|------------------|-------------|-----------------|
| SRM    | v5.8-1           | srm_fw      | v5.8-1          |
| fwa0   | 3.20             | dfxaa_fw    | 3.20            |
| pga0   | SS2.20X2         | kgpsa_7k_fw | SS2.20X2        |
| pgb0   | SS2.20X2         | kgpsa_7k_fw | SS2.20X2        |
| pua0   | A420             | cipca_fw    | A420            |
|        |                  | kgpsa_8k_fw | DS3.02A1        |
|        |                  | kzpsa_fw    | A12             |

UPD> update pgb0 -path iso9660:kg7303a1.sys/dqa0

Confirm update on:

pgb0

[Y/(N)]y

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

pgb0 Updating to SS3.03A1... Verifying SS3.03A1... PASSED.

UPD> exit

## Errors

1. When LFU is booted with HP\_COUNT SCM NVR variable set to a non-zero value, this message occurs. It will prevent micro updates but option firmware updates will work.

LFU micro updates are not supported when the system is hard partitioned.  
Please power down and unpartition first.

2. After loading newer firmware than is on the CD, the verify command will fail because it is verifying the loaded firmware off the V5.6 CD and what is in the KGPSAs NVRAM.

```
UPD> verify pga0
```

```
pga0 Verifying SS3.03A1... FAILED.
```

3. There are two versions of the KGPSA. A 64 bit option and a 32 bit option. They each have different firmware. If an attempt to load the wrong firmware is made the following message appears.

```
UPD> update pga0 -path iso9660:kg8303a1.sys/dqa0
```

```
Confirm update on:
```

```
pga0
```

```
[Y/(N)]y
```

```
WARNING: updates may take several minutes to complete for each device.
```

```
DO NOT ABORT!
```

```
pga0 firmware filename 'iso9660:kg8303a1.sys/dqa0' is bad
```

## **Upgrading KGPSA Firmware on Turbolasers or GS60/GS60E/GS140 Machines**

### **CAUTION!**

The solution mentioned in Blitz TD2831 is now available in the Download directory on Cybrary. See the readme files before proceeding with an update.

UNIX requires EMX driver V1.29 with firmware 381a4.

UNIX requires EMX driver V1.22 with firmware 303A1 or later. VMS requires patches to be installed. See Blitz TD2807-C for details

### **Overview**

Upgrading KGPSA firmware, when the adapter is installed in a AlphaServer 8200, 8400, GS60 or GS140 system, requires the use of the console RUN command. The run command requires the firmware.exe file be supplied. Depending on the firmware version needed, AL381a4.exe, AL303x2.exe, LP6LDR.EXE, LP7LDR.EXE, LP8LDR.EXE, 303allldr.exe or lp7303allldr.exe can be used. The lp6ldr.exe utility is available on the Alpha Systems Firmware CD, V5.4 or later in the utility directory. Newer firmware files may not be available on the Alpha Systems Firmware CD. In that case a CDrom can be created.

### **Files available**

|             |                                                  |
|-------------|--------------------------------------------------|
| AL381a4.exe | (LP8000/KGPSA-CA Loader/Firmware version 3.81A4) |
| AL303x2.exe | (LP8000/KGPSA-CA Loader/Firmware version 3.03X2) |
| lp6ldr.exe  | (LP6000/7000/ KGPSA-BC Loader plus firmware      |
| lp7ldr.exe  | (LP7000/ KGPSA-BC Loader plus KGPSA LP7000       |
| lp8ldr.exe  | (LP8000/ KGPSA-CA Loader plus KGPSA LP8000       |

### **Creating a CDROM**

A firmware update CD can be created. The following procedure describes making a CDROM with the firmware that corrects the issues described in Blitz TD2831. The filenames are subject to change with later releases of the firmware. The procedure described uses Adaptec Easy CD Writer Software. The actual navigation will change with different CDROM software. It is imperative that the file system type be set to ISO9660.

1. Create an options folder on a source medium and copy the file AL381a4.exe into the root directory and DD381a4.AWC into the options directory.
2. Using the Adaptec Easy CD Writer Software perform the following:
  - Select CD Layout properties from File Pulldown
  - In General Tab select the following:
    - File system: ISO9660
    - Mode: Mode 1 CDROM (single session)
  - Save the settings
  - Move both files and options folder to be copied to CD Layout window
  - Click on Create CD
  - Select 4x speed
  - Select number of copies
  - Create CD

## Terminal Setup

To boot the firmware executable on an Alpha Server 8000 series ARC emulator using a Digital VT420 Terminal, the following change is required to the VT420 setup.

1. F3 enter setup
2. Move to "COM"
3. Select "XOFF at 128"
4. Move to "Directory"
5. Select "Save"
6. Select "Exit"

## Console Setup and Running Utility

To update KGPSA firmware on an AlphaServer 8200, 8400, GS60 or GS140 system, the console parameters must be set up properly and the RUN command, not ARC, is used to start the program. Be sure to set any variables back to original values and INIT before returning system to customer.

1. Insert the firmware CDROM in the drive or a CDROM that was created with the necessary files. The directory structure is subject to change based on the CD used.
2. Set the console to serial mode.  
P00>>> **set console serial**
3. Set the console\_mode to advanced. Console\_mode is what the MODE setting will be after init.  
P00>>> **set console\_mode advanced**
4. Set arc\_enable to ON.  
P00>>> **set arc\_enable on**
5. Init the machine  
P00>>> **init**
6. At the P00>>> load the CDROM drivers (This step may not be required)  
P00>>> **load -f iso9660** (load the CDROM drivers)
7. Use the RUN command to start the appropriate firmware update utility.  
P00>>> **run iso9660:al381a4.exe -d dkd400 -p 0** or  
          **run iso9660:al303x2.exe -d dkd400 -p 0** or  
          **run iso9660:[utility]lp6ldr.exe -d dka400 -p 0** or  
          **run iso9660:[utility]lp7ldr.exe -d dka400 -p 0** or  
          **run iso9660:[utility]lp8ldr.exe -d dka400 -p 0** or  
          **run iso9660:[utility]lp7303a1ldr.exe -d dka400 -p 0** or  
          **run iso9660:[utility]303a1ldr.exe -d dka400 -p 0**  
  
          -d dka400    specifies the CDROM device to load the utility from  
          -p 0        specifies the PCI bus (hose) where the adapter is installed  
                      (i.e. 0,1,2,3)

### Example

P00>>> **run iso9660:[utility]lp6ldr.exe -d dka400 -p 0**

Loading image...

Transferring control...

WELCOME TO LP6DUTIL HOST DIAGNOSTIC UTILITY for Alpha V2.1-008  
Firmware load only, Firmware revision: SS2.20X2

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Hit RETURN or ENTER key to continue <CR>

LP6000/LP7000 Host Adapters found in the system: 1

Will update all appropriate controllers to firmware SS2.20X2

Enter 'C' or 'c' to continue and load, anything else to abort...

Beginning Down Load Process for Host Adapter 1

Place Host Adapter 1 in Diagnostic Mode to do down loading.  
( First reset may take a while )

Resetting Host Adapter 1

Host Adapter 1: POST Done.

WARNING: Host Adapter 1 is in Diagnostic Mode. Diagnostic Firmware Loaded.  
Diagnostic Firmware Version 1.12

Start DOWN LOADING Absolute Firmware Image to Host Adapter 1

Finished Down-Loading Code for Host Adapter 1

Resetting Host Adapter 1

Host Adapter 1: POST Done.

Host Adapter 1 is READY. Functional Firmware Loaded.

Diagnostic Firmware Version 1.12

Functional Firmware Version SS2.20X2

JEDEC ID = 10020193 (LP7K)

Hit RETURN or ENTER key to continue

Initializing...

System resets and update complete



## Upgrading KGPSA Firmware From AlphaBIOS

### **CAUTION!**

The solution mentioned in Blitz TD2831 is now available in the Download directory on Cybrary. See the readme files before proceeding with an update.

UNIX requires EMX driver V1.29 with firmware 381a4.

UNIX requires EMX driver V1.22 with firmware 303a1 or later. VMS requires pathes to be installed. See Blitz TD2807-C for details

### **Overview**

KGPSA firmware can be upgraded on most AlphaServer Systems using AlphaBIOS. A floppy or a CDROM can be used to perform the update. If you create your own CDROM or floppy, the file name must be 8 characters or less plus the extension. Multiple floppies may be required due to the size of the files. There are LP8000 (KGPSA-CA) and LP7000 (KGPSA-BC) files available. The two adapters use different firmware.

### **Files available**

If .exe files are used on a CDROM, rename them so they are 8 characters or less plus the extension.

- AL381a4.exe (LP8000/KGPSA-CA Loader/Firmware version 3.81a4)
- AL303x2.exe (LP8000/KGPSA-CA Loader/Firmware version 3.03x2)
- 303a1ldr.exe (LP8000/KGPSA-CA Loader/Firmware version 3.03a1)
- lp7303a1ldr.exe (LP7000/KGPSA-BC Loader/Firmware version 3.03a1)
- lp6ldr.exe (LP6000/7000 /KGPSA-BC Loader with embedded firmware)
- lp7ldr.exe (LP7000/KGPSA-BC Loader with embedded firmware)
- lp8ldr.exe (LP8000/KGPSA-CA Loader with embedded firmware)
  
- alphdnld.exe (firmware download utility - Firmware.awc files must be provided) Available on the Firmware CD in the Utility directory or on Cybrary
  
- dd381a4.awc (LP8000 KGPSA-CA V3.81a4 firmware)
- dd303x2.awc (LP8000 KGPSA-CA V3.03x2 firmware)
- sf303a1.awc (LP7000 KGPSA-BC V3.03a1 firmware)
- dd303a1.awc (LP8000 KGPSA-CA V3.03a1 firmware)

### **Creating a CDROM**

A firmware update CD can be created. The following procedure describes making a CDROM with the firmware that corrects the issues described in Blitz TD2831. The filenames are subject to change with later releases of the firmware. The procedure described uses Adaptec Easy CD Writer Software. The actual navigation will be different with different CDROM software. It is imperative that the file system type be set to ISO9660.

1. Create an options folder on a source medium and copy the following files AL381A4.exe into the root directory and DD381a4.AWC into the options directory.
2. Using the Adaptec Easy CD Writer Software perform the following:
  - Select CD Layout properties from File Pulldown
  - In General Tab select the following:
    - File system: **ISO9660**
    - Mode: **Mode 1 CDROM** (single session)
  - Save the settings

- Move both files and options folder to be copied to CD Layout window
- Click on Create CD
- Select **4x** speed
- Select number of copies
- **Create CD**

## **Procedure**

There are several ways of performing KGPSA firmware upgrades. The methods used will depends on the version of firmware required to be loaded.

1. The Alpha Systems Firmware Update CD can be used to update KGPSA with the version that is supplied on that CD. In this case LP6LDR, LP7LDR, LP8LDR or ALPHADNLD with the firmware.awc file can be used. The loaders are found in the UTILITY directory on the CD.
2. The Alpha Systems Firmware Update CD can be used to load the ALPHDNLDR.EXE loader and the firmware.awc can be supplied on a floppy or different CD.
3. A CD can be created to include the ALPHDNLD.EXE loader and any necessary .awc files
4. A CD can be created with one of the loaders that have embedded firmware.
5. A floppy can be created with the one of the loaders that have embedded firmware.

## **CDROM**

1. Bring the system up into AlphaBIOS by typing **ARC** at the P00>>> prompt.
  2. Enter setup by hitting **F2** (cntl-B)
  3. Select **Utilities**
  4. Select **Run Maintenance Program**
  5. Select the filename and the location to load from
 

|               |                          |                                                        |
|---------------|--------------------------|--------------------------------------------------------|
| Program Name: | <b>\al381a4.exe</b>      | (file includes the loader and firmware 381a4)          |
|               | <b>\al303x2.exe</b>      | (file includes the loader and firmware 303x2)          |
|               | <b>\77303ldr</b>         | (renamed lp7303alldr.exe to 77303ldr)                  |
|               | <b>\utility\alphdnld</b> | (requires a firmware.awc file)                         |
|               | <b>\utility\lp7ldr</b>   | (updates to the firmware version embedded in the file) |
- Location:      Select **CD:**

## **Floppy**

1. Fat format a 1.44 MB floppy.
2. Copy one of the following files to the floppy and rename it to 8 characters or less plus the extension. (i.e 7303alld.exe)
 

|                        |                                         |
|------------------------|-----------------------------------------|
| <b>al381a4.exe</b>     | (LP8000/KGPSA-CA Loader/381a4 firmware) |
| <b>al303x2.exe</b>     | (LP8000/KGPSA-CA Loader/303x2 firmware) |
| <b>303alldr.exe</b>    | (LP8000/KGPSA-CA Loader/303a1 firmware) |
| <b>lp7303alldr.exe</b> | (LP7000/KGPSA-BC Loader/Firmware)       |
3. Bring the system up into AlphaBIOS by typing **ARC** at the P00>>> prompt.
4. Enter setup by hitting **F2** (cntl-B)
5. Select **CMOS SETUP**
6. Set the Floppy Drive A: to 3.5" 1.44 MB



7. **ESC** to exit to the main menu
8. Select **Utilities**
9. Select **Run Maintenance Program**
10. Now select A: for floppy and enter the filename on the floppy for the KGPSA firmware  
Program Name: **al381a4** (file includes the loader and firmware 381a4)  
                  **al303x2** (file includes the loader and firmware 303x2)  
                  **alphdnld** (requires a firmware.awc file)  
                  **77303ldr** (lp7303a1ldr.exe renamed 77303ldr)  
Location:       Select **A:**

### **Errors**

When running KGPSA firmware update utilities there are several error messages that may be seen.

- Attempts to load the wrong firmware into an adapter (LP8000 firmware into an LP7000) will give the following error message.  
  
Error: Program image is not compatible with the host adapter
- When using ALPHDNLD.EXE it expects a firmware.awc file. If a firmware.exe file is supplied the following message occurs.  
  
Error: Image header checksum failed  
Image\_header\_hdr\_cks = 0xF69180  
generated cksum = 0xa1840491



## Problems Running lp6dutil.exe on a Turbolaser or GS60/60E/140 Machine

Attempts to run the KGPSA utility lp6dutil.exe on a Turbolaser or a GS60/60E/140 machine on the serial console port will fail with repeating characters. You may be able to hit a character and return to get thru some of the menus but in the example of a firmware update you must type the location of the firmware file. You are not able to type CD: etc. It just echos C's and D's The following will show the failure. On these machines you will need to run lp6ldr.exe instead.

```
P00>>>run iso9660:[utility]lp6dutil.exe -d dka400 -p 0
```

```
Loading image...
```

```
Transferring control...
```

```
WELCOME TO LP6DUTIL HOST DIAGNOSTIC UTILITY for Alpha V2.1-007
```

```
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```

```
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```

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written license from Digital or an authorized sublicensor.
```

```
Hit RETURN or ENTER key to continue
```

```
LP6000/LP7000 Host Adapters found in the system: 1
```

```
PRELIMINARY TESTING of Host Adapter 1
```

```
Host Adapter 1: PASS 0x1: Slim Memory Tests
```

```
Host Adapter 1: PASS 0x2: Slim Memory Tests
```

```
Host Adapter 1: PASS 0x1: BIU Registers Tests
```

```
Host Adapter 1: PASS 0x2: BIU Registers Tests
```

```
Host Adapter 1: PASS 0x1: BIU Configuration Registers Tests
```

```
Host Adapter 1: PASS 0x2: BIU Configuration Registers Tests
```

```
Host Adapter 1 PASSED PRELIMINARY TESTS
```

```
Resetting Host Adapter 1
```

```
Host Adapter 1: POST Done.
```

```
Host Adapter 1 is READY. Functional Firmware Loaded.
```

```
Diagnostic Firmware Version 1.12
```

```
Functional Firmware Version SS2.20X2
```

```
JEDEC ID = 10020193 (LP7K)
```

```
Hit RETURN or ENTER key to continue
```

```
HOST ADAPTER 1 Resources Info
```

```
pci_bus_num = 0
```

```
pci_dev_num = 0x1
```

```
slim_base_adr = 0x07F7F000
```

```
reg_mem_base_adr = 0x07F7CE00
```

```
reg_io_base_adr = 0x0000FE00
```

```
IRQ = 0x24
```

```
NOTE: Enter 0 in 'Option:' prompt to display previous menu
```

```
NOTE: All values entered are hexadecimal
```

```
LP6DUTIL Main Menu
```

```
1 - (not currently supported)
```

```
2 - (not currently supported)
```

```
3 - Restart Host Adapters
```

```
4 - (not supported)
```

```
5 - Maintenance
```

```
6 - Show Host Adapters Info
```

7 - Quit

Option: 55

Input value '0x55' out of range!!!

LP6DUTIL Main Menu

- 1 - (not currently supported)
- 2 - (not currently supported)
- 3 - Restart Host Adapters
- 4 - (not supported)
- 5 - Maintenance
- 6 - Show Host Adapters Info
- 7 - Quit

Option: 5

Maintenance

- 1 - Update Firmware
- 2 - Display Program Load List

Option: 1

Enter Full Path to Firmware Image file (eg. a:\sf200.awc): ccccccccccdcccccccc

## Using the KZPSA UTIL\_CLI.EXE File to Set KZPSA Parameters

To change the parameters on the KZPSA installed in a PCI bus on a Turbolaser you must run a utility located on the Alpha Systems Firmware Update CD-ROM.

The parameters that can be changed are:

```
SCSI_ID
FAST
TERMPower
RESET_ON_BOOT
SYNC
WIDE
TAGGED_QUEUEING
DISCONNECT
```

The utility used is located at: iso9660:[UTILITY]UTIL\_CLI.EXE on CD V3.6 and up  
It is located at iso9660:[CDROM.UTILITY]UTIL\_CLI.EXE on CD V3.5 and lower.

To run the utility insert the CD-ROM disk in the CD-ROM drive on your system then issue the command:

```
run iso9660:[UTILITY]UTIL_CLI.EXE -d dkd500 -p 0
 |
 |---PCI bus #
 |
 ----CD-ROM drive
```

On CDs V3.5 and older use the following command

```
run iso9660:[CDROM.UTILITY]UTIL_CLI.EXE -d dka500 -p n
```

Example run:

```
P08>>> set arc_enable on
```

```
P08>>> init
```

```
Initializing...
```

| F | E | D | C | B | A | 9 | 8 | 7   | 6 | 5 | 4  | 3 | 2 | 1 | 0 | NODE #   |
|---|---|---|---|---|---|---|---|-----|---|---|----|---|---|---|---|----------|
|   |   |   |   |   |   |   | A | M   | . | . | P  | . | . | . | . | TYP      |
|   |   |   |   |   |   |   | O | +   | . | . | ++ | . | . | . | . | ST1      |
|   |   |   |   |   |   |   | . | .   | . | . | EB | . | . | . | . | BPD      |
|   |   |   |   |   |   |   | O | +   | . | . | ++ | . | . | . | . | ST2      |
|   |   |   |   |   |   |   | . | .   | . | . | EB | . | . | . | . | BPD      |
|   |   |   |   |   |   |   | + | +   | . | . | ++ | . | . | . | . | ST3      |
|   |   |   |   |   |   |   | . | .   | . | . | EB | . | . | . | . | BPD      |
|   |   |   |   |   |   |   |   | +   | + | + | +  | + | + | + | + | C0 PCI + |
|   |   |   |   | . | . | . | . | .   | . | + | .  | . | . | . | + | C1 PCI + |
|   |   |   |   |   |   |   | . | .   | . | . | .  | . | . | + |   | EISA +   |
|   |   |   |   |   |   |   | . | A0  | . | . | .  | . | . | . | . | ILV      |
|   |   |   |   |   |   |   | . | 512 | . | . | .  | . | . | . | . | 512MB    |

AlphaServer 8200 Console V2.2-102, SR0M V1.3, Sep 20 1995 18:02:50

```
P08>>> show config
```

|      | Name                             | Type     | Rev  | Mnemonic  |
|------|----------------------------------|----------|------|-----------|
| TL5B |                                  |          |      |           |
| 4++  | KN7CC-AB                         | 8014     | 0000 | kn7cc-ab0 |
| 7+   | MS7CC                            | 5000     | 0000 | ms7cc0    |
| 8+   | KFTIA                            | 2020     | 0B02 | kftia0    |
| C0   | Internal PCI connected to kftia0 |          |      | pci0      |
| 0+   | ISP1020                          | 10201077 | 0001 | isp0      |
| 1+   | ISP1020                          | 10201077 | 0001 | isp1      |
| 2+   | DECchip 21040-AA                 | 21011    | 0023 | tulip0    |
| 3+   | DEC PCI FDDI                     | F1011    | 0000 | pfi0      |

```

4+ ISP1020 10201077 0001 isp2
5+ ISP1020 10201077 0001 isp3
6+ DECchip 21040-AA 21011 0023 tulip1
7+ PCI NVRAM 71011 0002 pci_nvram0

```

```

C1 PCI connected to kftia0 pci1
0+ SIO 4828086 0004 sio0
5+ KZPSA 81011 0000 kzpsa0

```

```

 Controllers on SIO sio0
0+ DECchip 21040-AA 21011 0023 tulip2
1+ FLOPPY 2 0000 floppy0
2+ KBD 3 0000 kbd0
3+ MOUSE 4 0000 mouse0

```

```

 EISA connected to pci1 through sio0 eisa0
1+ EDAC960 77009835 0007 edac9600

```

```

P08>>> load -f iso9660 - load CDROM driver
P08>>> run iso9660:[UTILITY]UTIL_CLI.EXE -d dkd400 -p 1
Loading image...
Transferring control...
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```

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```

KZPSA Configuration and Diagnostic Utility (CLI Version 1.0)
=====
Type HELP For Command Summary

```

```

Found 1 KZPSA(s) in your system:
 BUS SLOT HW REV FW REV SCSI ID
KZPSA #1 0 5 L01 A08 7

```

KZPSA #1 is currently selected.

[KZPSA #1] **help**

## **COMMAND SUMMARY**

### **HELP or ?**

displays this command summary.

### **EXIT SAVE**

exits saving any changes made.

### **EXIT NO\_SAVE**

exits not saving any changes made.

### **SELECT KZPSA <1-n>**

selects the KZPSA you want to configure and / or test. To see the available KZPSAs use the SHOW KZPSA command.

### **SHOW KZPSA**

displays KZPSA(s) in a system including their hardware and firmware revisions, bus, and slot.

### **SHOW DEVICES**

displays any devices connected to the KZPSA.

### **SHOW CONFIG**

displays all parameter settings (including device specific parameters) for the selected KZPSA.

### **DEFAULTS**

use the default values for all the configuration parameters.

### **SET SCSI\_ID <0-15>**

sets the KZPSAs SCSI ID to the value given.

Example: SET SCSI ID 7

The above example sets the KZPSAs SCSI ID to 7

**ENABLE / DISABLE FAST**

enables or disables KZPSA fast SCSI mode.

**ENABLE / DISABLE TERMPower**

enables or disables the supply of termpower to the SCSI bus from the KZPSA.

**ENABLE / DISABLE RESET ON BOOT**

enables or disables a SCSI bus reset on boot-up by the KZPSA.

**ENABLE / DISABLE SYNC <0-15 | ALL>**

enables or disables synchronous negotiation to the SCSI device having the SCSI ID specified or all of the SCSI devices.

**ENABLE / DISABLE WIDE <0-15 | ALL>**

enables or disables wide negotiation to the SCSI device having the SCSI ID specified or all of the SCSI devices.

**ENABLE / DISABLE TAGGED QUEUING <0-15 | ALL>**

enables or disables tagged queuing to the SCSI device having the SCSI ID specified or all of the SCSI devices.

**ENABLE / DISABLE DISCONNECT <0-15 | ALL>**

enables or disables disconnect to the SCSI device having the SCSI ID specified or all of the SCSI devices.

**RESET SCSI BUS**

resets the SCSI bus.

**LOGS**

puts the utility into Logs mode. From Logs the user can view the firmware and hardware error logs.

**TEST KZPSA [REPEAT] [HALT ON ERROR | CONTINUE ON ERROR | LOOP ON ERROR]**

runs a self test on the KZPSA. Selecting the REPEAT causes the test to continually repeat. You can also specify what action you want the test to take in the event of an error.

**TEST DEVICES [REPEAT] [HALT ON ERROR | CONTINUE ON ERROR | LOOP ON ERROR]**

runs SCSI device self tests. Selecting the REPEAT causes the test to continually repeat. You can also specify what action you want the test to take in the event of an error.

[KZPSA #1] **show config**

KZPSA #1:

|            |         |            |         |                |          |
|------------|---------|------------|---------|----------------|----------|
| BUS:       | 0       | SLOT:      | 5       | SCSI ID:       | 7        |
| HW REV:    | L01     | FW REV:    | A08     | TERMINATION:   | Absent   |
| TERMPower: | Enabled | FAST MODE: | Enabled | RESET ON BOOT: | Disabled |

| DEVICE  | WIDE        | SYNCHRONOUS | TAGGED     |         |
|---------|-------------|-------------|------------|---------|
| SCSI ID | NEGOTIATION | NEGOTIATION | DISCONNECT | QUEUING |
| 0       | Enabled     | Enabled     | Enabled    | Enabled |
| 1       | Enabled     | Enabled     | Enabled    | Enabled |
| 2       | Enabled     | Enabled     | Enabled    | Enabled |
| 3       | Enabled     | Enabled     | Enabled    | Enabled |
| 4       | Enabled     | Enabled     | Enabled    | Enabled |
| 5       | Enabled     | Enabled     | Enabled    | Enabled |
| 6       | Enabled     | Enabled     | Enabled    | Enabled |
| 7       | Enabled     | Enabled     | Enabled    | Enabled |
| 8       | Enabled     | Enabled     | Enabled    | Enabled |
| 9       | Enabled     | Enabled     | Enabled    | Enabled |
| 10      | Enabled     | Enabled     | Enabled    | Enabled |
| 11      | Enabled     | Enabled     | Enabled    | Enabled |
| 12      | Enabled     | Enabled     | Enabled    | Enabled |
| 13      | Enabled     | Enabled     | Enabled    | Enabled |
| 14      | Enabled     | Enabled     | Enabled    | Enabled |
| 15      | Enabled     | Enabled     | Enabled    | Enabled |

[KZPSA #1] **show devices**

(SCSI = 7, Fast)

| DEV     | PID   | VID   | REV   | SCSI DEV |
|---------|-------|-------|-------|----------|
| =====   | ===== | ===== | ===== | =====    |
| dka0001 | HSZ40 | DEC   | V25Z  | DIR      |
| dka0002 | HSZ40 | DEC   | V25Z  | DIR      |
| dka0003 | HSZ40 | DEC   | V25Z  | DIR      |

[KZPSA #1] **show kzpsa**

Found 1 KZPSA(s) in your system:

|          | BUS | SLOT | HW REV | FW REV | SCSI ID |
|----------|-----|------|--------|--------|---------|
| KZPSA #1 | 0   | 5    | L01    | A08    | 7       |

KZPSA #1 is currently selected.

[KZPSA #1] **set scsi\_id 6**

|            |         |            |         |                |          |
|------------|---------|------------|---------|----------------|----------|
| BUS:       | 0       | SLOT:      | 5       | SCSI ID:       | 6        |
| HW REV:    | L01     | FW REV:    | A08     | TERMINATION:   | Absent   |
| TERMPower: | Enabled | FAST MODE: | Enabled | RESET ON BOOT: | Disabled |

[KZPSA #1] **exit save**

Initializing...

| F | E | D | C | B | A | 9 | 8 | 7   | 6 | 5 | 4  | 3 | 2 | 1 | 0 | NODE #   |
|---|---|---|---|---|---|---|---|-----|---|---|----|---|---|---|---|----------|
|   |   |   |   |   |   |   | A | M   | . | . | P  | . | . | . | . | TYP      |
|   |   |   |   |   |   |   | O | +   | . | . | ++ | . | . | . | . | ST1      |
|   |   |   |   |   |   |   | . | .   | . | . | EB | . | . | . | . | BPD      |
|   |   |   |   |   |   |   | O | +   | . | . | ++ | . | . | . | . | ST2      |
|   |   |   |   |   |   |   | . | .   | . | . | EB | . | . | . | . | BPD      |
|   |   |   |   |   |   |   | + | +   | . | . | ++ | . | . | . | . | ST3      |
|   |   |   |   |   |   |   | . | .   | . | . | EB | . | . | . | . | BPD      |
|   |   |   |   |   |   |   |   | +   | + | + | +  | + | + | + | + | C0 PCI + |
|   |   |   |   |   |   |   | . | .   | . | + | .  | . | . | . | + | C1 PCI + |
|   |   |   |   |   |   |   | . | .   | . | . | .  | . | . | + |   | EISA +   |
|   |   |   |   |   |   |   | . | A0  | . | . | .  | . | . | . | . | ILV      |
|   |   |   |   |   |   |   | . | 512 | . | . | .  | . | . | . | . | 512MB    |

AlphaServer 8200 Console V2.2-102, SROM V1.3, Sep 20 1995 18:02:50

P08>>> **load -f iso9660** - Load CDROM driver

P08>>> **run iso9660:[UTILITY]UTIL\_CLI.EXE -d dkd400 -p 1**

Loading image...

Transferring control...

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KZPSA Configuration and Diagnostic Utility (CLI Version 1.0)

=====

Type HELP For Command Summary

Found 1 KZPSA(s) in your system:

|          | BUS | SLOT | HW REV | FW REV | SCSI ID |
|----------|-----|------|--------|--------|---------|
| KZPSA #1 | 0   | 5    | L01    | A08    | 6       |

KZPSA #1 is currently selected.

[KZPSA #1] **show config**

KZPSA #1:

|            |         |            |         |                |          |
|------------|---------|------------|---------|----------------|----------|
| BUS:       | 0       | SLOT:      | 5       | SCSI ID:       | 6        |
| HW REV:    | L01     | FW REV:    | A08     | TERMINATION:   | Absent   |
| TERMPower: | Enabled | FAST MODE: | Enabled | RESET ON BOOT: | Disabled |

| DEVICE  | WIDE        | SYNCHRONOUS | TAGGED     |
|---------|-------------|-------------|------------|
| SCSI ID | NEGOTIATION | NEGOTIATION | DISCONNECT |
| 0       | Enabled     | Enabled     | Enabled    |
| 1       | Enabled     | Enabled     | Enabled    |
| 2       | Enabled     | Enabled     | Enabled    |
| 3       | Enabled     | Enabled     | Enabled    |



|    |         |         |         |         |
|----|---------|---------|---------|---------|
| 4  | Enabled | Enabled | Enabled | Enabled |
| 5  | Enabled | Enabled | Enabled | Enabled |
| 6  | Enabled | Enabled | Enabled | Enabled |
| 7  | Enabled | Enabled | Enabled | Enabled |
| 8  | Enabled | Enabled | Enabled | Enabled |
| 9  | Enabled | Enabled | Enabled | Enabled |
| 10 | Enabled | Enabled | Enabled | Enabled |
| 11 | Enabled | Enabled | Enabled | Enabled |
| 12 | Enabled | Enabled | Enabled | Enabled |
| 13 | Enabled | Enabled | Enabled | Enabled |
| 14 | Enabled | Enabled | Enabled | Enabled |
| 15 | Enabled | Enabled | Enabled | Enabled |

[KZPSA #1] **test devices**

| DEC     | KZPSA-BB | A08 | (SCSI = 6, Fast) |                  |
|---------|----------|-----|------------------|------------------|
| DEV     | PID      | VID | REV              | Self-test status |
| dka0001 | HSZ40    | DEC | V25Z             | Passed           |
| dka0002 | HSZ40    | DEC | V25Z             | Passed           |
| dka0003 | HSZ40    | DEC | V25Z             | Passed           |

[KZPSA #1] **exit no\_save**

Initializing...

|   |   |   |   |   |   |   |   |     |   |   |    |   |   |   |   |          |
|---|---|---|---|---|---|---|---|-----|---|---|----|---|---|---|---|----------|
| F | E | D | C | B | A | 9 | 8 | 7   | 6 | 5 | 4  | 3 | 2 | 1 | 0 | NODE #   |
|   |   |   |   |   |   |   | A | M   | . | . | P  | . | . | . | . | TYP      |
|   |   |   |   |   |   |   | O | +   | . | . | ++ | . | . | . | . | ST1      |
|   |   |   |   |   |   |   | . | .   | . | . | EB | . | . | . | . | BPD      |
|   |   |   |   |   |   |   | O | +   | . | . | ++ | . | . | . | . | ST2      |
|   |   |   |   |   |   |   | . | .   | . | . | EB | . | . | . | . | BPD      |
|   |   |   |   |   |   |   | + | +   | . | . | ++ | . | . | . | . | ST3      |
|   |   |   |   |   |   |   | . | .   | . | . | EB | . | . | . | . | BPD      |
|   |   |   |   |   |   |   |   | +   | + | + | +  | + | + | + | + | C0 PCI + |
|   |   |   |   | . | . | . | . | .   | . | + | .  | . | . | . | + | C1 PCI + |
|   |   |   |   |   |   |   | . | .   | . | . | .  | . | . | + | . | EISA +   |
|   |   |   |   |   |   |   | . | A0  | . | . | .  | . | . | . | . | ILV      |
|   |   |   |   |   |   |   | . | 512 | . | . | .  | . | . | . | . | 512MB    |

AlphaServer 8200 Console V2.2-102, SROM V1.3, Sep 20 1995 18:02:50



## **KZPSA\_EDIT Utility**

You can run KZPSA\_EDIT from the console prompt to set up some KZPSA parameters. This command is available on the TurboLaser.

kzpsa\_edit - Edit KZPSA FLASH parameters.

### OVERVIEW:

The kzpsa\_edit command permits the modification of KZPSA Flash parameters from the console. Individual bits can be set or cleared, or bytes can be set to a specific value. Entering kzpsa\_edit without an option or target device will list these parameters for all KZPSA devices in the system.

```
kzpsa_edit ([busid] [<kzpsa_controller_name>]
 [fast]
 [termpwr]
 [-sd]
 [-offset n] [-value n]
 [-bit n] [-set]
 [-clear])
 [-p]
```

### COMMAND ARGUMENT(S):

<kzpsa\_controller\_name> - KZPSA controller name.  
Only the parameters for this controller  
will be modified.

### COMMAND OPTION(S):

```
-sd - Set defaults
-offset n - Selects the byte offset to be modified
-value n - Gives the new byte value(s), valid only with -offset
-bit n - Selects the bit to be modified, valid only with -offset
 -value and -bit are mutually exclusive
-set - The bit should be set, valid only with -bit
-clear - The bit should be clear, valid only with -bit
 -set and -clear are mutually exclusive
-p - print flash contents
```

### COMMAND EXAMPLE(S):

```
Find all KZPSA devices
>>> show config kzpsa*

Load the kzpsa support code
>>> load -f kzpsa

List all current FLASH parameters
>>> kzpsa_edit

Change the host Bus ID from 7 to 6
>>> kzpsa_edit busid kzpsa0
kzpsa0 bus id = 7, new bus id ? 6

Modify four bytes of parameters
>>> kzpsa_edit -offset 0 -value 11223344 kzpsa0

Set one bit of the parameters
>>> kzpsa_edit -offset 0 -bit 1 -set kzpsa0

Set all defaults
>>> kzpsa_edit -sd kzpsa0
```



## **wwidmgr - World Wide ID Manager Description**

Wwidmgr command is used to configure devices connected to KGPSA/HSG80. It allows them to be seen at the console with a SHOW DEVICE command. It allows you to define alias names for fibre channel devices and associate them to the worldwide identifiers (WWIDs) for devices that will be used for booting or dumping. This command is needed to initially setup non-volatile storage with information the console will use later for booting, dumping and showing devices. It is available on the V5.5 Alpha Firmware CD in the doc directory.

1. The wwidmgr command would be used by the following

### **NT Users**

- Do not use this command.

### **Tru64 Unix Users**

- Tru64 Unix V5.0 users who want to boot a disk connected thru a KGPSA
- If not booting via a KGPSA the wwidmgr command is not required.

### **OpenVMS Users**

- OpenVMS users who want to use a disk connected thru a KGPSA as a boot or dump device.
- If not booting via a KGPSA the wwidmgr command is not required.

### **Diagnostic users and advanced users**

- Used on new installations to examine the topology and accessibility of fibre channel ports on the HSG80 and in gathering disk information.

2. The wwidmgr command would be used in the following instances.

- Initial setup of boot and dump devices
- The configuration changes and non-volatile information is not correct
- A new or additional boot or dump device is added
- A previously existing boot or dump device is deleted.

3. The wwidmgr command is invoked by the user to

- Display the worldwide id's (WWID) of the disk devices
- Display accessible disk devices
- Display connections to the fabric
- Display the unit IDENTIFIER defined at the HSG80 controller console
- Display topology information
- Set the console device name for the selected WWID into console non-volatile memory
- Set the desired path(s) through fibre channel connections to control accessibility

4. On the AlphaServer 8x00, 4x00 and 1200 the console must be in diagnostic mode for this command to work. On other platforms there is no such restriction. Use either **set mode diag** or **set console mode diag**. If the console is not in diag mode on the AlphaServer 8x00, 4x00 and 1200 systems the console response is as follows.

```
P00>>> wwidmgr -show wwid
wwidmgr: No such command
```

On all platforms when you enter the wwidmgr command you will be in **wwidmgr mode** until the system is initialized. After issuing the wwidmgr command booting is not allowed until the system is re-initialized. A system reset or initialization is the only mechanism to exit wwidmgr mode.

5. For more info see the wwidmgr\_v10.pdf document at <http://ftp.digital.com/pub/Digital/Alpha/firmware/readmes/v5.5/doc/>



## AlphaServer With HSJ's May Get a Hard Error #8 On INIT

An Alpha Server system, that has a Tape Loader attached to an HSJ controller, reports a Hard Error #8 after power on.

### PROBLEM SYMPTOM:

After power on, the console may report a Hard Error #8. The error will be pointing at a disk type device.

### Example:

```
*** Hard Error - Error #8 -
Diagnostic Name ID Device Pass Test Hard/Soft 1-JAN-206
exer_kid 000002e9 duc2.12.0.4.0 0 0 1 0 12:00:0
Buffer counts differ - buf1:0, buf2:512, location:2a00
*** End of Error ***
```

### SOLUTION:

The tape loader is identified as a pseudo disk device. When the console tries to exercise the disk device it doesn't behave properly (from the console's perspective). The Operating System knows how to identify and treat the pseudo disk device as a tape loader, such that usage is not impaired.

In order to identify if your Hard Error #8 is related to a tape loader, please check the following:

From the SRM:

Show dev

This command will show a device of type hsx2 if you have a pass through device. Please verify that the device indicated by the Hard Error #8 shows hsx2 in one of its fields.

From HSJ console that the failing device is attached to:

show pass

This should show any pass through devices you have, and who uses it.

show load

This will show you devices of type loader.

If the output of these commands show that the pass through device is used by a tape loader, then you can safely disregard the Hard Error #8.

### Example:

```
P00>>>sho dev
dqa0.0.0.15.0 DQA0 TOSHIBA CD-ROM XM-6302B 1017
dub951.29.0.6.1 54DUA951 (R5HSJU) HSX0
duc2.12.0.4.0 54DUA2 (R5HSJC) HSX2 <-- This is it
dva0.0.0.1000.0 DVA0
muc10.13.0.4.0 54MUA10 (R5HSJD) TZ87
muc11.13.0.4.0 54MUA11 (R5HSJD) TZ87
```

R5HSJC>sho pass

| Name | StorageSet | Uses | Used by |
|------|------------|------|---------|
|------|------------|------|---------|

|      |             |       |    |
|------|-------------|-------|----|
| P895 | passthrough | TL895 | D2 |
|------|-------------|-------|----|

R5HSJC>sho load

| Name | Type | Port Targ | Lun | Used by |
|------|------|-----------|-----|---------|
|------|------|-----------|-----|---------|

-----  
TL895            loader            1    0    0                    P895

Notice how the loader from the show load command (TL895) is used by the pass through device P895.

ADDITIONAL COMMENTS:

Engineering is investigating methods for inhibiting this error report. For the time being there is no cause for concern because the system is behaving exactly as expected.

See Blitz TD 2941 for details.



## Missing File Message From LFU for DEFPA firmware

When booting LFU on a TurboLaser the DEFPA firmware shows as "Missing file" if you do a list from the UPD prompt.

UPD> **list**

| Device    | Current Revision | Filename | Update Revision |
|-----------|------------------|----------|-----------------|
| kn7cc-ab0 | V4.0-4           | kn7cc_fw | V4.1-6          |
| kn7cc-ab1 | V4.0-4           | kn7cc_fw | V4.1-6          |
| kn7cc-ab2 | V4.0-4           | kn7cc_fw | V4.1-6          |
| kn7cc-ab3 | V4.0-4           | kn7cc_fw | V4.1-6          |
| kzpsa0    | A10              | kzpsa_fw | A10             |
| kzpsa1    | A10              | kzpsa_fw | A10             |
| kzpsa2    | A10              | kzpsa_fw | A10             |
| kzpsa3    | A10              | kzpsa_fw | A10             |
| kzpsa4    | A10              | kzpsa_fw | A10             |
| kzpsa5    | A10              | kzpsa_fw | A10             |
| kzpsa6    | A10              | kzpsa_fw | A10             |
| pfi0      | 2.46             | dfpaa_fw | Missing file    |
| pfi1      | 2.46             | dfpaa_fw | Missing file    |

There was a filename change for the defpa firmware. Since the LFU drivers reside in the console you must first update the SRM console to a minimum of the V4.1 console off the V3.8 CD. Then you can reboot the CD again and it will load the DEFPA firmware and allow you to do the DEFPA update.



## Option Firmware Fails to Load Off of Floppy

After creating a console firmware floppy and an options floppy using the documented procedure for WNT I discovered the following problem.

When attempting to create two NT firmware floppies to update an AlphaServer 2100A EV5 console and its options I could not get the option firmware to load. I used the following procedure as documented.

1. I formatted the floppies under NT and selected FAT format
2. I copied the firmware file AS2100A\_e5\_v4\_7.exe from the web site to a floppy and called it FWUPDATE.EXE
3. I copied the option files as2X00fw.txt, cipca315.sys, dfeaa130.sys, dfeab246.sys, dfxaa246.sys and kzpsaa10.sys to the second floppy.
4. From the NT boot menu I select Supplementary Menu and the Update Firmware.
5. It reads the system firmware in and I can update without issue.
6. However it asks for the options floppy and when I install it, it reads and asks for the next option floppy. Then it asks to hit return or type DONE. When I type DONE I get a UPD> prompt.

Now a list command from the UPD prompt says KZPSA - firmware file missing.

The problem is with Windows 95 and WNT. We copy a .txt file to the floppy that defines the other files loaded on the floppy. Windows95 and NT add an extra carriage return to each line of the text file. So, for instance, when the LFU reads the first line of the text file, it now sees KZPSA<cr><cr><lf>. The LFU strips off <cr><lf> and then it looks for a file called KZPSA<cr>.SYS, which doesn't exist.

This will be corrected in the next console version. The next version will be robust enough to strip off whatever characters are added. Meanwhile, if someone actually needs to get the latest firmware for one of the adapters and their only means is from floppy, they can still "cat" the file from the floppy.

```
UPD> exit # go to manual mode

>>> cat fat:kzpsaa10.sys/dva0 > kzpsa_fw # copy appropriate
 # firmware

>>> lfu # return to the LFU
```

**NOTE:** I attempted this procedure 1x on our lab 2100 and it did NOT work.

To see the contents of the .txt file type the following at the console

```
>>> CAT FAT:AS2X00.TXT/DVA0 - to see the contents of the file.
>>> CAT FAT:AS2X00.TXT/DVA0 | HD - to confirm how many <CR><LF> are at the end of
 each line of the file.
```



## Firmware Upgrades with Console Secure Set

With the new secure console capability ENABLED the firmware update will fail with this following message

```
>>> console is secure - parameters are not allowed
```

The firmware upgrade stops here and won't continue. This is occurring because after entering bootfile name system does a reinit and loses the fact that you have already entered the password once to even start the upgrade. The only way we have found to get around this is to >>>**clear password** and then do firmware update then enable secure console again with same password or a new password.

### Example:

```
>>> login
please enter password:<15-30 characters>

>>> boot -fl 0,a0 dka400
bootfile:[alpha400]as400_v5_6.exe

system reinitiates itself, completes power-up selftest countdown

eb...ea.e9.e8.e7.e5.
v6.1-2 built on may 8

>>> console is secure - parameters are not allowed

The firmware upgrade stops here and won't continue.
```

### Workaround:

```
>>> login
please enter password:<15-30 characters>

>>> clear password
please enter password:<15-30 characters>

>>> boot -fl 0,a0 dka400
bootfile:[alpha400]as400_v5_6.exe

UPD> update
UPD> verify
UPD> exit
```

### To Re-enable the Password/Secure

```
>>> set password
please enter password:<15-30 characters> old password if wish
please confirm password:<15-30 characters> old password if wish

>>> set secure
>>> login
please enter password:<15-30 characters>
```

Now the firmware updated should be completed and the console will be back in Secure mode.



## How to Clear the SRM Console Password on an AlphaStation 500 / 600

### Overview

If a customer sets a console password on an AlphaStation 500 or AlphaStation 600, then forgets the password, it must be cleared before certain console commands and functions can be done. This page describes methods of creating a floppy to clear the password. There are procedures to build the floppy using OpenVMS, Tru64 UNIX and Windows.

### OpenVMS

1. Locate file `clr_pwd.exe` and copy the file to an OpenVMS system. The file is also located at one of the following two locations  
LEDDEV::DISK\$PROJECT\_DSK1:[ALCOR.TEST RELEASE]CLR\_PWD.EXE  
[http://Cybrary.inet.cpqcorp.net/DOWNLOAD/UTILITIES/SYSTEM/clr\\_pwd.zip](http://Cybrary.inet.cpqcorp.net/DOWNLOAD/UTILITIES/SYSTEM/clr_pwd.zip)
2. Init and mount the floppy. Create a directory and copy `clr_pwd.exe` to the floppy with the following commands.  

```
$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) clr_pwd.exe
$ init/dens=HD/index=begin dva0: clr_pwd
$ mount dva0: clr_pwd
$ copy/contiguous clr_pwd.exe dva0:[0,0]
$ mcr writeboot
Update VAX portion of boot block (default is Y): No
Update Alpha portion of boot block (default is Y): Yes
[enter AXP bootfile:] dva0:[0,0]clr_pwd.exe
```
3. Dismount the disk and shutdown VMS.  
\$ **dismount dva0:**

### Tru64 UNIX

1. Locate file `clr_pwd.exe` and copy the file a Tru64 UNIX system.
2. Download the file `mkbootfirm.tar` available at:  
<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/mkbootfirm.tar>
3. You can untar `mkbootfirm` on your target Tru64 UNIX system with the command:  
# **tar xvf mkbootfirm.tar**
4. Make sure you have a floppy that has been low-level formatted. For example, to low-level a floppy in drive 0 type  
# **fddisk -fmt /dev/rfd0c** (or whatever floppy driver name)
5. Change default to directory with `mkbootfirm.exe`  
# **cd mkbootfirm**
6. Run `mkbootfirm` on the .exe image that you downloaded. `mkbootfirm` uses a .exe image to create a file that can be dd'd to floppy.  
The following will create a bootable floppy to clear the console password.  
# **./mkbootfirm clr\_pwd.exe | dd of=/dev/rfd0c bs=64k**

### Windows

1. Locate file `clr_pwd.exe` and copy the file to a windows system.
2. Locate file `makeboot.exe` (Alpha) or `mkboot.exe` (Intel or Alpha) and copy the file to a windows system. (C: in this example).
3. Pull up a MSDOS window and use these two files to create bootable FSL floppy using the following procedure:

4. Insert writeable FAT formatted floppy (any data on this floppy will be erased).

(Intel or Alpha) **C:\ mkboot clr\_pwd.exe**  
(Alpha) **C:\ makeboot clr\_pwd.exe**

#### **Procedure**

1. Power down the system.
2. On the AlphaStation 500 move the jumper from J11 to J13
3. On the AlphaStation 600 move the jumper from W1 to W3.  
You can only select one of these jumpers at a time. Select the jumper link  
On Cybrary to see a picture of jumper location.
4. Insert the floppy into the AlphaStation and power it on.
5. This will boot the floppy and the console will print a message that the  
console password has been cleared.
6. Power off the system and move the jumper back to the original position.
7. Powerup system and the system will come up with the password cleared.



## **How to Clear the SRM Console Password on an AlphaStation 255**

### **Overview**

If a customer sets a console password on an AlphaStation 255, then forgets the password, it must be cleared before certain console commands and functions can be done. This page describes methods to clear the password.

If the user forgets the password, there is only one recovery mechanism. The user must:

1. Power the system off.
2. Open the system box.
3. Set the configuration DIP switches to erase NVRAM (Switches 1 and 2 to ON).
4. Power the system on and wait for the console to start.
5. Power the system off.
6. Reset the configuration dip switches to the original settings (1 and 2 OFF).
7. Put the system top and side covers on and make them secure.
8. Power the system on and console will now be in user mode

In addition to clearing out the secure mode password, all environment variables will be cleared and must be reestablished by the user. For this reason the user should keep a list of any environment variables he set along with the values they were set to. That way the environment variables can be re-established if the user must clear the NVRAM to reset the console to user mode.



## How to Clear the Console Password on an AlphaStation/AlphaServer 400

### Overview

If a customer sets a console password on an AlphaStation or AlphaServer 400, then forgets the password, it must be cleared before certain console commands and functions can be done. This page describes methods to clear the password.

The motherboard can be replaced or the toy and nvram chips can be replaced. Console environmental variables will all have to be reset.

The part numbers and locations of the chips on the motherboard are listed in the following table.

| System                             | NVRAM Location/Partnumber | TOY Location/Partnumber |
|------------------------------------|---------------------------|-------------------------|
| AlphaServer/AlphaStation 400 4/233 | E8 / 21-29631-02          | E42 / 21-39125-02       |
| AlphaServer/AlphaStation 400 4/266 | E56 / 21-29631-02         | E42 / 21-39125-02       |



## How to Clear the SRM Console Password on a Miata and Miata GL

### Overview

If a customer sets a console password on the Miata Digital Personal Workstation, then forgets the password, it must be cleared before certain console commands and functions can be done. This page describes methods of creating a floppy to clear the password.

### **Warning**

Running this program will reset all the site-specific environmental variables. You must have them written down so you can restore them to original values. This included SRM and AlphaBIOS variables.

### **Procedure**

1. Unzip the file miata\_clear\_password.zip file.
2. Copy the file clrpswd.exe to a FAT floppy and place in drive A:
3. Write down all console environmental variables including AlphaBIOS settings.
4. Power off and unplug system to disconnect Aux +5V
5. Remove the mother board.
6. Remove the battery from its socket.
7. Wait a minimum of two minutes.
8. Replace Battery and install motherboard back into the system
9. Powerup the system.
10. During Miata powerup, hit F2 to enter the AlphaBIOS menu.
11. From the AlphaBIOS main menu, select:
  - Utilities
  - Run Maintenance Program...
  - Enter clrpswd in the program name dialog box
  - Location:
    - A:
12. The following output is displayed:

```
Clear SRM PASSWORD Version 001
All SRM and AlphaBIOS environment variables will be destroyed.

Are you really sure you want to do this: (Yes/[No]): Y

If you answer "N" or simply hit return , you will go back to AlphaBIOS and
the variable are untouched.
```
13. There will be an approximately 10 second pause.
14. The following output is displayed:

```
[Pause]...
```
15. Press return to go back to the main screen.
16. From the AlphaBIOS main menu, select:
  - CMOS Setup
  - TAB to Select OS
  - Select Tru64 UNIX as the operating system
17. Press f10 TWICE.
18. Press RETURN
19. When the Main Menu returns it is now safe to power cycle the system
20. At this point in time all of the environment variables for both the Digital UNIX console and AlphaBIOS have been destroyed. The next time power is applied to the system, the system defaults will be reset. Any variables you had in place prior to this will have to be reset.



## After Firmware Update, Init Gets bad value - mopv3\_boot not modified

When attempting to update console firmware on an AlphaStation 500/266 to the V6.3-5 console off the V3.8 CD , you may get a message

**bad value - mopv3\_boot not modified.**

When you boots the CD and selects the default firmware file of [ALPHA600]as600\_V6\_3.exe he also gets the following message

```
Digital AlphaStation 500/600 Console V6.3-5
 built on Nov 20 1996 at 16:01:42
bad value- invalid selections:
ON
OFF
bad value - mopv3_boot not modified.
Maverick Startup
```

The MOPV3\_BOOT variable had 4 valid values {0,1, ON, OFF }  
The 0,1 were removed from the valid values list. This was done to adhere to the srm standards.

The error message occurs on every powerup because someone has edited the nvram powerup script and added the line

```
>>> SET MOPV3_BOOT 1
```

To view if this is true use the following command.

```
>>> cat nvram
```

To edit the line to change the 1 to a ON use the following

```
>>> edit nvram
```

```
>>> set mopv3_boot on
```





## Running the NT ARC or AlphaBIOS Console

The SRM console has the ability to run the either the NT ARC or AlphaBIOS consoles without having to re-flash the system via the firmware update utility. When following the steps below, a temporary NT ARC or AlphaBIOS runtime environment will be created. The console environment will return to the normal SRM console following a power cycle of the system. This temporary NT ARC or AlphaBIOS environment can be used to boot the NT operating system or to run ARC or AlphaBIOS based utilities.

To Start the NT ARC or AlphaBios Console Environment perform the following steps:

- a. Power on the system

```
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.
ef.df.ee.ed.ec.f4.eb.....ea.e9.e8.e7.e6.e5.
V6.4-1, built on Feb 1 1997 at 14:53:34
>>>
```

- b. Set the OS\_TYPE to NT

```
>>> set os_type nt
```

- c. Load the Firmware Update compact disc into the drive.

- d. Boot the CD using one of the following filenames at the bootfile prompt.

```
>>> boot -fl 0,A0 dka400
```

Bootfile:

### **Bootfiles for AlphaStation 200/400 Series**

| <u>Model</u>         | <u>Bootfile</u>       |
|----------------------|-----------------------|
| AlphaStation 200,250 | [ALPHA200]ARCBOOT.EXE |
| AlphaStation 255     | [ALPHA255]ABBOOT.EXE  |
| AlphaStation 400     | [ALPHA400]ARCBOOT.EXE |

#### **Note:**

As of the V5.1 CD the files have been removed from the AlphaStation 400 directory. Use [ALPHA200] as the directory for the AlphaStation 400.

If the system has never been run in the ARC or AlphaBIOS environment before, certain environment variables will need to be set up

Typically the ARC console starting up in this temporary environment for The first time will require set up of its configuration tree and certain environment variables. To proceed with setup, follow these steps:

- o Select language from the language setup screen
- o Select Supplementary Menu
- o Select Set up the System
- o Select Set default environment variables

To run RCU or some other utility select **"Set up the System"** followed by **"Run a Program"**

In order to boot Windows NT you will need to enter the default media where Windows NT can be located, the scsi bus number, scsi id, and partition information.

- o Select Set default Configuration

In this menu you will need to set up the monitor type, floppy drive

configuration, keyboard type, and scsi host id.

- o Select Supplementary menu, and save changes

Note: If you do not wish to boot Windows NT but only need to execute a utility program, select "Run a program" from the Boot menu and then enter the proper path and file name.

At this point you may be required to set up the boot device. If so Follow these remaining steps:

- o Select Supplementary menu again
- o Select Set up the System
- o Select Manage boot selection menu    o Select Add a boot selection

Identify the boot partition information, osloader directory, the operating system root directory, and finally a unique name for this boot selection.

- o Select Setup menu
- o Select Supplementary menu, and save changes
- o Select Boot menu

At this point the system is ready to boot Windows NT. The setup information will remain intact any time you re-enter the ARC environment.

Note: When the system is power cycled it will return to the SRM Console environment.

At the console prompt (>>>), enter the following command  
>>> **set os\_type unix** or **set os\_type vms**

#### AlphaBIOS Console Setup

Typically the AlphaBIOS console starting up in this temporary environment for the first time will require some set up. If NT has never been run on the system the following message may appear: AlphaBios determines that the NVRAM data is not Valid

- o Press F2 to enter setup and configure the system.
- o Select Utilities
- o Select OS Selection Setup (see note)

Enter Boot Name, Boot File, and OS Path partition information using The menu provided.

#### Note

Alternatively, if you wish to run a utility program select the "Run Maintenance Program" menu item from the "Utilities" menu and enter the path and filename info.

## **Different AlphaServer's get 'open failure' on Update**

Firmware updates may fail on AlphaServer 1000/1000A EV5, AlphaServer 2100, and possibly other Alpha systems with DE500's installed. You will see an error message similar to the example below from an AlphaServer 1000.

**Alphaserver 1000 'open failure firmware filename 'srm\_fw'' or  
Alphaserver 1000 'open failure firmware filename 'arc\_fw''**

This is caused when an "active" network is found. The update utility will sometimes attempt to find the file on the network and will not look elsewhere.

In order to correct this, perform one of the following steps

- disconnect the ethernet cable
- remove the network device
- perform the update from the ARC> Install new firmware prompt.



### **AlphaServer 1000/1000A EV5 Firmware From V5.2 CD Won't Fit on Floppy**

The AlphaServer 1000 and 1000A EV5 firmware for the EV5 processors off of the V5.2 firmware CD is too large to fit on a 1.44 MB floppy.

The files on the V5.3 CD will correct this issue.

Initially files were placed in the interim directory, but since they have corrected this on later version the interim directory is no longer available for this issue.



## **AlphaServer 1000/1000A 5/300 CPU Requires V5.23 AlphaBIOS**

The AlphaServer 1000/1000A 5/300 CPUs required a minimum of V5.23 AlphaBIOS. This version is off the V3.8 CD. If you downgrade the console to a version prior to the V3.8 CD version you will have problems invoking the AlphaBIOS console. If you type AlphaBIOS at the >>> you will hang after the **"ARC Firmware Loaded"** message.

This is due to a compatibility problem between AlphaBIOS V5.23 and earlier HALs. The updated HALs are on <http://www.windows.digital.com> and should fix this problem.

To re-load V5.23 AlphaBIOS you'll need to use the following procedure:

1. Make a bootable firmware update floppy using the V4.6A f/w file or later. (see <http://ftp.digital.com/pub/DEC/Alpha/firmware/> for instructions)
2. If you have SRM V4.6-22x / AlphaBIOS V5.21 on the system, you can stop it from switching to the AlphaBIOS and hanging by holding in the HALT button while you reset the system. When you get the >>> prompt, insert the f/w floppy and type BOOT DVA0 to boot from it.

If the SRM f/w on the system is older than V4.6-22x, you'll have to enable fail-safe booter mode to bypass the hang. Jumper bank J4 on the CPU module (labeled "J4 SROM SELECT JUMPER") will have a jumper on the front-most (8th) pin pair; move this jumper to the rear-most (1st) pair, then power up the system with the firmware update floppy in the floppy drive. The firmware update utility will be booted automatically.

3. Type UPDATE to update the firmware.
4. If you used the fail-safe booter, power off the system and move the jumper on J4 back to its original position.





## AlphaServer 1000/1000A Led Code CB Due to Wrong Firmware on Motherboard

The AlphaServer 1000/1000A motherboard contains the console firmware. Since the 1000 series machines do NOT have a dual-SRM like the 2x00 series machines the motherboards only come with EV4 firmware loaded. If you install a replacement motherboard in a system with an EV5 cpu you will get an OCP code of CB. Led CB says

SROM execution completed      The system could hang here if EV4 console code is used with 5/xxx (EV5) systems.

There are four methods to work around this problem. One involves getting an EV4 processor and then upgrading the firmware to EV5 and reinstalling the original CPU. The other methods involves booting the failsafe loader floppy that should be supplied with all new motherboards or creating your own floppy off the Digital website at <http://ftp.digital.com/pub/DEC/Alpha/firmware/>

### Hardware Method

- a. After replacing the motherboard with a new spare, install a spare EV4 1000 or 1000A CPU depending on your configuration.
- b. Make sure that you have at least 5 memory SIMMs of the same size installed. The EV5 system only requires 4 SIMMs where the EV4 system requires 5 SIMMs. Four for data and one for ECC.
- c. Now when you power up you will not fail POST with a led CB. You will come to the >>>
- d. Boot the firmware update CD by typing the following command and one of the following bootfiles.

```
>>> b -fl 0,A0 dka500
bootfile: [alpha1000]as1000_e4_v5_4.exe - for the 1000
bootfile: [alpha1000a]as1000a_e4_v5_6.exe - for the 1000A
```

- e. At the UPD prompt type CPU\_UPGRADE to upgrade firmware from EV4 to EV5. The do a verify and exit.

```
UPD> cpu_upgrade
confirm update on: SRM: Yes
confirm update on: ARC: Yes
```

```
EXECUTING THIS SCRIPT WILL UPGRADE YOUR MODEL 4/AAA CONSOLE
FIRMWARE TO MODEL 5/XXXX CONSOLE FIRMWARE
```

```
UPD> verify
UPD> exit
```

- f. Now power down the machine. Remove the EV4 CPU and reinstall the EV5 CPU. Return the system to its original memory configuration. Now when you power Back on you will have a motherboard running EV5 firmware to match the CPU.

## Bootable Floppy Using OpenVMS

- a. Locate the console firmware from either the latest Firmware Update CD or access it over the web at one of the following locations.

<http://ftp.digital.com/pub/Digital/Alpha/firmware/>  
<http://ftp.digital.com/pub/DEC/Alpha/firmware/>

as1000\_e5\_v5\_4.exe (for AlphaServer 1000 Model 5/xxx)  
as1000a\_e5\_v5\_6.exe (for AlphaServer 1000A Model 5/xxx)

- b. Make a Bootable Floppy Procedure - this example is for the 1000A.

Insert blank floppy into floppy drive

```
$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) as1000a_e5_v5_6.exe
$ init/dens=hd/index=begin dva0: fwupdate
$ mount dva0: fwupdate
$ create/directory dva0:[as1000a]
$ copy/contig as1000a_e5_v5_6.exe dva0:[as1000a]fwupdate.exe
$ mcr writeboot
Update VAX portion of boot block (default is Y) : No
Update AXP portion of boot block (default is Y) : Yes
Enter AXP boot file : dva0:[as1000a]fwupdate.exe
$ dismount dva0:
```

- c. Move the CPU jumper to enable the Fail-Safe Loader to position 7.  
J1 position 0 to J1 position 7 for the AlphaServer 1000 EV4  
J4 position 0 to J4 position 7 for the AlphaServer 1000/1000A 5/300  
J1 position 0/1 to J1 position 7 for the AlphaServer 1000/1000A 5/333 or 5/400  
(the last 2 setting may have the jumper on position 1 but 0 is the default)
- d. Insert the floppy in DVA0 and power the machine off/on.
- e. On power up the OCP will display "loading floppy" then "starting cpu". The console screen will then reset and then the UPD> prompt will appear. If you get no other display on the console it is because the module may have the environmental variable CONSOLE set to graphics. If so connect a VT and proceed with the update or set the variable to graphics and reset.
- f. Update the console code by typing the following commands.  
UPD> **update**  
    update SRM: **Yes**  
    update ARC: **Yes**  
UPD> **verify**  
UPD> **exit**
- g. Power off the system and set the fail-safe jumper back to its original position.
- h. Power on and you will now come to the >>> without the OCP led code CB.

### **Bootable Floppy Using a PC Running WNT**

- a. Locate the console firmware from either the latest Firmware Update CD or access it from our Cybrary site or over the web at one of the following locations.

<http://Cybrary.inet.cpqcorp.net/DOWNLOAD/FIRMWARE/SYSTEMS/ALPHA/> Cybrary Online CDs

<http://ftp.digital.com/pub/Digital/Alpha/firmware/> Alpha Firmware Internet Readme

<http://ftp.digital.com/pub/DEC/Alpha/firmware/> Alpha Firmware Internet Readme

- b. Copy the firmware to your system.
- c. Locate mkboot.exe and put it on the disk (C: in this example) It is available at one of the following locations  
<http://Cybrary.inet.cpqcorp.net/DOWNLOAD/UTILITIES/SYSTEM/mkboot.zip>  
<http://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/>
- d. Copy the firmware to the same drive as mkboot and rename it to fwupdate.exe
- e. Pull up a MSDOS window and use these two files to create bootable FSL floppy using the following procedure:

Insert writeable FAT formatted floppy

C:\mkboot fwupdate.exe

Bad command or file name

mkboot V1.1: create a bootable floppy

Please insert a formatted diskette into drive A: and press and key: <CR>

Number of sectors per track for this disk is 18

Writing image to drive A:.. Press ^C to abort.

Track: 45 Head: 0 Sector: 16

Done.

- f. Insert the floppy in the drive with the failsafe loader jumper enabled and power up. You should now get to the UPD> prompt.

### **Bootable Floppy Using WNT on an Alpha**

- a. Locate the firmware at one of the locations listed in the previous step.

- b. You can also go to the WEBSITE at

<http://www.compaq.com/support/files/alphant/>

select **Compaq/DIGITAL Alpha Systems Firmware and HALs**

select **alphaserver 1000 or 1000a** and cpu type **EV4 or EV5**

- c. Pull down the file AlphaBIOS Firmware for the specified system.
- d. Unzip this file. The file fwupdate.exe will be created. You may also find makeboot.exe. If it is not in the zip file go to Cybrary or the firmware website at

<http://Cybrary.inet.cpqcorp.net/DOWNLOAD/UTILITIES/SYSTEM/makeboot.zip>

<http://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/>

- e. Pull up a MSDOS window and use these two files to create bootable FSL floppy using the following procedure. The MAKEBOOT command must be executed from an Alpha system. You can also use mkboot.exe on the Alpha

insert writeable floppy

C:\makeboot -f fwupdate

warning this will overwrite data on floppy continue: **Yes**

- f. Insert the floppy in the drive with the failsafe loader jumper in the position 7 and power up. You should now get to the UPD> prompt.

### **Bootable Floppy Using WNT When You Already Have a Copy of Makeboot.Exe**

- a. Locate the console firmware from either the latest Firmware Update CD or access it over the web at one of the following locations.  
<http://ftp.digital.com/pub/Digital/Alpha/firmware/>  
<http://ftp.digital.com/pub/DEC/Alpha/firmware/>
- b. Locate makeboot.exe and put on the disk (C: in this example)
- c. Copy the firmware to the floppy and rename fwupdate.exe.
- d. Pull up a MSDOS window and use these two files to create bootable FSL floppy using the following procedure:

Insert writeable FAT formatted floppy

**C:\makeboot -f fwupdate.exe**

Warning this will overwrite data on floppy continue?: **Yes**

- e. Insert the floppy in the drive with the failsafe loader jumper enabled and powerup. You should now get to the UPD> prompt.

The failsafe loader floppy can be ordered for the AS1000a 5/300.  
The part number is AK-QYTCB-CA.

## **Description of the Different FailSafe Loaders (FSL) Available**

The failsafe loader (FSL) is a method used to reload good console firmware when the main console firmware image is corrupted. Without the use of a FSL, hardware would have to be replaced if the console image is corrupted. There are several different implementations of the FailSafe Loader (FSL) available.

1. Jumper selects reading a FSL floppy on power up that has console firmware loaded on it.
  - AlphaServer 300, 400, 800, 1000, 1000A
  - AlphaStation 200, 250, 255, 400, 500, 600, 600A
2. Switch or jumper selects the FSL ROM which is pre-loaded with a console image that allows a limited console so you can boot the firmware media.
  - AlphaServer 2x00, 2100A
3. Console determines firmware is corrupt and requests a special FSL floppy. In this case the floppy contains a temporary SRM console that allows you to get to the >>> so you can boot the firmware.
  - AlphaServer 1200, 4x00
  - Digital Server 7000 Model 7300
  - Digital Server 5000 Model 5300
  - Digital Ultimate Workstation
4. Console determines firmware is corrupt and with LED and BEEP codes indicates it requires a FSL floppy. This floppy will include console firmware and will load on power up.
  - Digital Personal Workstation a/au
5. Console determines firmware is corrupt and will attempt to load temporary console code from floppy on powerup. Can also request the FSL by enabling jumpers or switches.
  - Compaq AlphaServer ES40
  - Compaq AlphaServer DS20
  - Compaq AlphaServer DS10
6. The following systems do NOT have a failsafe loader available
  - DEC 3000 all models
  - DEC 4000 all models
  - VAX/DEC 7000 and 10000
  - AlphaServer 8200/8400
  - AlphaServer GS60/GS60E/GS140



## **Procedure to Make a Bootable FailSafe Loader Floppy For Most AlphaStation/AlphaServer Systems**

### **Bootable Floppy Using OpenVMS**

1. Locate the console firmware from either the latest Firmware Update CD or access it from out Cybrary site or over the web at one of the following locations.

<http://Cybrary.inet.cpqcorp.net/DOWNLOAD/FIRMWARE/SYSTEMS/ALPHA> - **Cybrary**

<http://ftp.digital.com/pub/Digital/Alpha/firmware/> - **Alpha Firmware Internet Readme**

<http://ftp.digital.com/pub/DEC/Alpha/firmware/> - **Alpha Firmware Internet Readme**

2. Copy one of the following firmware .exe files to your system.
3. Follow this procedure to make a Bootable Floppy (this example is for the AlphaServer 300):

Insert blank write enabled floppy into the floppy drive.

```
$ Set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) as300_v7_0.exe
$ init/dens=hd/index=begin dva0: fwupdate
$ mount dva0: fwupdate
$ create/directory dva0:[as300]
$ copy/contig as300_v7_0.exe dva0:[as300]fwupdate.exe
$ mcr writeboot
Update VAX portion of boot block (default is Y) : No
Update AXP portion of boot block (default is Y) : Yes
Enter AXP boot file : dva0:[as300]fwupdate.exe
$ dismount dva0:
```

4. Move the jumper to activate the Fail-Safe Loader floppy load as follows.

| System Type                    | Failsafe loader Jumper Setting        |
|--------------------------------|---------------------------------------|
| AlphaServer 300                | System Board J2 pins 1-2              |
| AlphaServer 400                | CPU J5 pins 1-2                       |
| AlphaServer 800 *              | CPU J1 position 7 on                  |
| AlphaServer 1000/1000A EV4/xxx | CPU J1 position 7 on                  |
| AlphaServer 1000/1000A 5/300   | CPU J4 position 7 on                  |
| AlphaServer 1000/1000A 5/333   | CPU J1 position 7 on                  |
| AlphaServer 1000/1000A 5/400   | CPU J1 position 7 on                  |
| AlphaStation 200               | Motherboard J2 pins 1-2               |
| AlphaStation 250               | Motherboard J2 pins 1-2               |
| AlphaStation 255               | Motherboard Switch 1 off, Switch 2 on |
| AlphaStation 400               | CPU J5 pins 1-2                       |
| AlphaStation 500               | System board J13                      |
| AlphaStation 600               | System Board W3                       |
| AlphaStation 600A              | CPU J1 position 7 on                  |

\* V5.7 requires 2 floppies for FSL. See procedure on starting on page 359

5. Insert the floppy in DVA0 and power the machine off/on.

6. Power up the system.

- On the AlphaServer 800 you will hear 1 beep indicating the SRAM has successfully passed control to the SRM console. The machine will continue initialization and load the firmware off of the floppy and bring you to a UPD> prompt.
- On power up the 1000/1000a OCP will display "loading floppy" then "starting cpu". The console screen will then reset and then the UPD> prompt will appear. If you get no other display on the console it is because the module may have the environmental variable CONSOLE set to graphics. If so connect a VT and proceed with the update or set the variable to graphics and reset.
- On other platforms the power on selftest will run and the floppy will be read. The console will then display the UPD> prompt.

7. Update the console code by typing the following commands.



UPD> **update**

update SRM: **Yes**

update ARC: **Yes**

UPD> **verify**

UPD> **exit**

8. Power off the system and set the fail-safe jumper back to its original position.
9. Power on and you will now come to the >>> and the new firmware will be loaded.

#### **Bootable Floppy Using an Alpha Running WNT**

1. Locate the console firmware from either the latest Firmware Update CD or access it from our Cybrary site or over the web at one of the following locations.

<http://Cybrary.inet.cpqcorp.net/DOWNLOAD/FIRMWARE/SYSTEMS/ALPHA/> Cybrary Online CDs

<http://ftp.digital.com/pub/Digital/Alpha/firmware/> Alpha Firmware Internet Readme

2. Copy the firmware to your system.
3. Locate makeboot.exe and put it on the disk (C: in this example). You can also use mkboot.exe on the Alpha.
4. Copy the firmware to the same drive as makeboot and rename it to fwupdate.exe
5. Pull up a MSDOS window and use these two files to create bootable FSL floppy using the following procedure:

Insert writeable FAT formatted floppy

C:\makeboot -f fwupdate.exe or

C:\mkboot fwupdate.exe

Warning this will overwrite data on floppy continue?: **Yes**  
(The makeboot command defaults to drive a, to specify a different device use -d b:)

6. Insert the floppy in the drive with the failsafe loader jumper enabled and power up.
7. You should now get to the UPD> prompt.

#### **Bootable Floppy Using a PC Running WNT**

1. Locate the console firmware from either the latest Firmware Update CD or access it from our Cybrary site or over the web at one of the following locations.

<http://Cybrary.inet.cpqcorp.net/DOWNLOAD/FIRMWARE/SYSTEMS/ALPHA/> Cybrary Online CDs

<http://ftp.digital.com/pub/Digital/Alpha/firmware/> Alpha Firmware Internet Readme

<http://ftp.digital.com/pub/DEC/Alpha/firmware/> Alpha Firmware Internet Readme

2. Copy the firmware to your system.
3. Locate mkboot.exe and put it on the disk (C: in this example)
4. Copy the firmware to the same drive as mkboot and rename it to fwupdate.exe

5. Pull up a MSDOS window and use these two files to create bootable FSL floppy using the following procedure:

Insert writeable FAT formatted floppy

```
C:\mkboot fwupdate.exe
```

```
Bad command or file name
```

```
mkboot V1.1: create a bootable floppy
```

```
Please insert a formatted diskette into drive A: and press and key: <CR>
```

```
Number of sectors per track for this disk is 18
```

```
Writing image to drive A:.. Press ^C to abort.
```

```
Track: 45 Head: 0 Sector: 16
```

```
Done.
```

6. Insert the floppy in the drive with the failsafe loader jumper enabled and power up. You should now get to the UPD> prompt.

### **Bootable Floppy Using WNT and AlphaBIOS Firmware Zip File**

1. Go to <http://www.compaq.com/support/files/alphant/firmware/index.html>.
2. Select the appropriate CPU type and speed.
3. Pull down the ARC or AlphaBIOS Firmware for that machine.
4. Unzip this file. The files fwupdate.exe and makeboot.exe will be created.

#### **Note:**

Not all platforms have the makeboot.exe file in them. Check the zip files at the website listed in step 1 or download Makeboot.exe from here in .zip format. You can also use mkboot.exe on the Alpha platform.

5. From an Alpha system running Windows NT, pull up a MSDOS window and use these two files to create bootable FSL floppy using the following procedure:

Insert writeable FAT formatted floppy

```
C:\makeboot -f fwupdate.exe
```

```
Warning this will overwrite data on floppy continue: Yes
```

```
(The makeboot command defaults to drive a, to specify a different drive
use -d b:)
```

6. Insert the floppy in the drive with the failsafe loader jumper enabled and power up.
7. You should now get to the UPD> prompt.

## AlphaServer 800/Digital Server 3000 Model 3300/3305 New FSL Procedure

### Overview

Starting with the V5.7 console firmware, two floppies will be needed to update console firmware. One floppy contains the LFU image and the SRM console firmware. The other floppy contains AlphaBIOS firmware. This procedure will be valid for creating a FSL floppy or a normal boot floppy. There will be methods listed to use a PC running NT or and Alpha running NT or UNIX.

### Necessary Files

The following procedures require different files depending on the platform and/or operating system.

- mkboot.exe      Alpha/PC NT utility to make a bootable floppy
- makeboot.exe    Alpha NT utility to make a bootable floppy
- mkbootfirm.exe   Alpha UNIX utility to make a bootable floppy
- cru.exe          LFU utility with SRM firmware embedded
- crarcrom.exe     AlphaBIOS firmware

These files are located either on Cybrary or on the firmware website at <http://ftp.digital.com/pub/Digital/Alpha/firmware/interim/as800/>.

### Creating a bootable firmware floppy

#### **PC - Windows NT**

1. Locate and save the following files to your PC on the top level directory of any disk.
  - mkboot.exe      PC/ALPHA NT image to make a bootable disk
  - cru.exe          LFU and SRM firmware
  - crarcrom.exe    AlphaBIOS firmware
2. Fat format two floppies
3. From an MSDOS window execute the following command  
**mkboot cru.exe**
4. Save the crarcrom.exe file to a second fat formatted floppy.
5. The first floppy is bootable and will also function as a FSL floppy. Insert the floppy in the system and at the >>> type **B DVA0**.
6. At the UPD> type **exit** and answer **Y** to the question Do you want to do a manual update. This will bring you back to the UPD> prompt.
7. Now update SRM with the command  
UPD> **UPDATE SRM**
8. To update AlphaBIOS, install the second floppy and type the command  
UPD> **update arc -path fat:\crarcrom.exe/dva0 .**

If you execute the verify command it will indicate file is missing for the AlphaBIOS firmware.

## Alpha - Windows NT

1. Locate and save the following files to your Alpha. Save them on the top level directory of any disk.
  - `makeboot.exe` Alpha image to make a bootable disk
  - `mkboot.exe` PC/ALPHA NT image to make a bootable disk
  - `cru.exe` LFU and SRM firmware
  - `crarcrom.exe` AlphaBIOS firmware
2. Fat format two floppies
3. From an MSDOS window execute the following command  
**`makeboot -f cru.exe`** or  
**`mkboot cru.exe`**
4. Save the `crarcrom.exe` file to a second fat formatted floppy.
5. The first floppy is bootable and will also function as a FSL floppy. Insert the floppy in the system and at the `>>>` type **`B DVA0`**.
6. At the `UPD>` type **`exit`** and answer **`Y`** to the question Do you want to do a manual update. This will bring you back to the `UPD>` prompt.
7. Now update SRM with the command  
`UPD> UPDATE SRM`
8. To update AlphaBIOS, install the second floppy and type the command  
`UPD> update arc -path fat:\crarcrom.exe/dva0 .`

If you execute the verify command it will indicate file is missing for the AlphaBIOS firmware.

## Alpha - TRU64 UNIX

1. Locate and save the following files to your Alpha.
  - `mkbootfirm.exe` Alpha/UNIX image to make a bootable disk
  - `mkbootfirm.tar` Alpha/UNIX .exe image in tar format
  - `cru.exe` LFU and SRM firmware
  - `crarcrom.exe` AlphaBIOS firmware
2. If you loaded the .tar file you must untar it using the command  
**`# tar xvf mkbootfirm.tar`**  
  
This will create a `mkbootfirm` directory. Make sure you save `cru.exe` to this directory.  
  
If you loaded the `mkbootfirm` image from the interim directory of the firmware webpage, you will need to set execute permissions on the file. Use the command  
**`# chmod 755 mkbootfirm`** or **`chmod +x mkbootfirm`**
3. Insert floppy diskette 1.
4. Change directory to where files were downloaded. Make sure `mkbootfirm` and `cru.exe` are in the same directory  
**`# cd [to directory with files]`**
5. Format the floppy.  
**`# fddisk -fmt /dev/rfd0a`** or  
  
With Tru64 UNIX V5.0 you can do one of the following  
**`# fddisk -fmt /dev/rdisk/floppy0a`** or  
  
**`# cd /dev`**  
**`# ./MAKEDEV fd0`**

- ```
# fdisk -fmt /dev/rfd0a
```
6. From directory where files are located execute the following

```
# ./mkbootfirm clu.exe |dd of=/dev/rfd0c bs=64k
```
 7. Insert floppy diskette 2.
 8. Create a soft link to /dev/fddrive with the following command

```
# ln -s /dev/rfd0c /dev/fddrive
```
 9. Format the floppy. See step 5 for commands.
 10. Add a DOS format onto the floppy disk

```
# /usr/bin/mtools/mformat -s 18 a:
```
 11. Use mwrite to low level copy UNIX to DOS the SRM and ARC firmware.

```
# /usr/bin/mtools/mwrite clsrmmrom.exe a:\clsrmmrom.exe  
# /usr/bin/mtools/mwrite clarcrom.exe a:\clarcrom.exe
```
 12. Insert the first floppy in the system and at the >>> type **b dva0**.
 13. Answer **Y** to the "Do you want to do a manual update? [y/(n)]" question.
This will bring you back to the UPD> prompt.
 14. At the UPD> prompt update SRM with the command
UPD> **update srm**
 15. Now insert the second floppy. Upgrade AlphaBIOS firmware with the command
UPD> **update arc -path fat:\crarcrom.exe/dva0**

How to Build and Use a FSL Floppy on An AlphaServer 4000/4100/1200

Overview

The fail-safe loader is a software routine that loads the SRM console image from floppy. Once the is running you will want to run LFU to update FEPROM 0 with a new image. FEPROM 0 contains images of the SROM, XSROM, PAL, decompression, and SRM console code.

If the fail-safe loader loads, the following conditions exist on the machine:

- The SROM has passed its tests and successfully unloaded the XSROM. If the SROM fails to unload both copies of XSROM, it reports the failure to the control panel display and COM1 if possible, and the system hangs.
- The XSROM has completed its B-cache and memory tests but has failed to unload the PALcode in FEPROM 0 sector 1 or the SRM console code.
- The XSROM reports the errors encountered and loads the fail-safe loader.

FSL floppy Information

The AlphaServer 4000/4100/1200 systems do not have a jumper to enable the failsafe loader. Instead if the console is corrupt you will be asked to insert a FSL floppy. This will allow a temporary console to be loaded so you can type LFU and upgrade the firmware from CD, floppy or over the network. The following article describes three methods of building the floppy and procedures on how to use it. There are also pointers to documentation and the rhboot.exe , mkboot.exe and makeboot.exe images you will need.

You can order a FSL floppy - part number QZ-00WAA.HC.5.0 or you can build one using the following procedure.

How to Build a FSL loader Floppy Using OpenVMS

You need to obtain the console file rhboot.exe file from Cybrary. It is located at http://Cybrary.inet.cpqcorp.net/DOWNLOAD/UTILITIES/SYSTEM/rhboot_v5.exe .

You can also locate it inside the following .zip files on Cybrary at http://Cybrary.inet.cpqcorp.net/DOWNLOAD/UTILITIES/SYSTEM/mkboot_rhboot.zip
http://Cybrary.inet.cpqcorp.net/DOWNLOAD/UTILITIES/SYSTEM/makeboot_rhboot.zip

This will give you a zip file with the rhboot.exe and either mkboot.exe (PC/ALPHA image) or makeboot.exe (Alpha image) You can also find the rhboot.exe file internally by going to Harmny::firm03:[rawhide.prerelease.fsl.v50] .

HARMNY::FIRM03:[RAWHIDE.PRERELEASE.FSL.V50]

```
$README.TXT;3          3  26-SEP-1997 10:43:56.00
FSL_RELNOTE.PS;1       60  26-SEP-1997 16:21:56.00
MAKE_FSL_FLOPPY.COM;2   2  26-SEP-1997 10:49:02.00
RHBOOT.EXE;1          1629 17-SEP-1997 17:51:39.00
```

Filename	Description
\$README.TXT	V5.0 Fail Safe Loader Readme file
FSL_RELNOTE.PDF	AlphaServer Fail Safe Loader Release Note (PDF) AV-R1FZB-TE
MAKE_FSL_FLOPPY.COM	.Com file to make a FSL floppy with OpenVMS
RHBOOT_V5.EXE	V5.0 AlphaServer 1200 / 4x00 Recovery Console Image

The latest rhboot.exe image (version 5 - 09/17/97) in this area will work for recovering corrupt consoles of revision v1.2-4, as well as all future versions.

The following command procedure will build an FSL floppy. This procedure needs to run on an Alpha VMS system. The file will prompt the user for the .exe file to write to the floppy. The rhboot.exe file is located at may30::firm03:[rawhide.prerelease.fsl.v50]rhboot.exe. The procedure will always format the floppy first (which takes a couple minutes).

The command procedure for building the FSL floppy diskette follows:

```
$!  
$! make_rawhide_floppy.com  
$!  
$!      P1 = Alpha firmware EXE file to be writebooted to a floppy  
$!  
$ if P1 .eqs. "" then inquire P1 "Firmware file to writeboot"  
$ inquire ignore "Insert blank HD floppy in DVA0, then continue"  
$ set verify  
$ init /density=hd/index=begin dva0: rhboot  
$ mount dva0: rhboot  
$ create /directory dva0:[as4x00]  
$ copy /contig 'P1' dva0:[as4x00]rhboot.exe  
$ mcr writeboot  
n  
Y  
dva0:[as4x00]rhboot.exe  
$ dismount dva0:  
$ set noverify  
$ exit
```

How to Build a FSL Loader Floppy Using a PC Running WNT

1. Obtain the rhboot.exe and mkboot.exe files. This is a zip file that has rhboot.exe, mkboot.exe and mkboot.txt.
2. Format a floppy diskette
3. Go to the DOS prompt create a FSL floppy by typing the following.
C:\> **mkboot rhboot.exe**
Bad command or file name
mkboot V1.1: create a bootable floppy
Please insert a formatted diskette into drive A: and press and key: <CR>
Number of sectors per track for this disk is 18
Writing image to drive A:. Press ^C to abort.
Track: 45 Head: 0 Sector: 16
Done.
4. Insert the floppy in the system with corrupt firmware and init.
5. At the LP00>>> prompt type LFU and update firmware from CD, another floppy or over ethernet.

How to Build a FSL floppy Using an Alpha running WNT

1. Obtain the rhboot.exe and makeboot.exe files. This is a zip file that has rhboot.exe and makeboot.exe.
2. Format a floppy diskette
3. Go to the DOS prompt create a FSL floppy by typing the following.
C:\> **makeboot -f rhboot.exe**
makeboot utility, version 002.
Executable file rhboot.exe, size 834048 <bytes> 1629 blocks.

Warning: All data on the floppy will be overwritten.

Continue? [Yes/No <default>]: **yes**


```

Geometry for Drive a:
    Media Type 3.5,    1.44 MB,    512 bytes/sector
    Cylinders 80    Tracks/Cylinder 2    Sectors/Track 18

Writing floppy
100 % done

```

Note:

The makeboot command defaults to drive a, to specify a different device use d b:

Insert the floppy in the system with corrupt firmware and init.

4. At the LP00>>> prompt type LFU and update firmware from CD, another floppy or over ethernet.

Procedure

1. On init the console reports a problem with the console code and requests you insert the FSL floppy and reset the system

```

SROM V1.1 on cpu0
SROM V1.1 on cpu1
XSROM V4.9 on cpu1
XSROM V4.9 on cpu0
Bcache testing complete on cpu1
Bcache testing complete on cpu0
mem_pair0 -    64 MB
mem_pair1 -    64 MB
mem_pair2 -    64 MB
mem_pair3 -    64 MB
20..20..21..21..23..
please wait 6 seconds for T24 to complete
24..24..
Memory testing complete on cpu0
Memory testing complete on cpu1
Sctr 3 CONSLE code CHKSM fail
FSL V2.0 on cpu0
FSL failed  Insert FSL floppy  Reset system

```

Note:

With only a graphics terminal you will not see the above console messages. The OCP will show

FSL V2.0 on cpu0
Load FSL floppy

If you want to see the console output connect a serial terminal to the COM1 port of the AlphaServer 4100 or AlphaServer 1200.

2. Insert the FSL floppy and reset the system. The system will load the fsl console and give you and LP00>>> prompt.

```

SROM V1.1 on cpu0
SROM V1.1 on cpu1
XSROM V4.9 on cpu1
XSROM V4.9 on cpu0
Bcache testing complete on cpu1
Bcache testing complete on cpu0
mem_pair0 -    64 MB
mem_pair1 -    64 MB
mem_pair2 -    64 MB
mem_pair3 -    64 MB
20..20..21..21..23..
please wait 6 seconds for T24 to complete
24..24..
Memory testing complete on cpu0
Memory testing complete on cpu1

```

```

Sctr 3 CONSLE code CHKSM fail
.....
starting console on CPU 0
sizing memory
  3      64 MB DIMM
  3      64 MB DIMM
  3      64 MB DIMM
  3      64 MB DIMM
Secondary CPU1 failed to join
probing IOD1 hose 1
  bus 0 slot 1   NCR 53C810
  bus 0 slot 4   PCI-PCI Bridge
    probing PCI-PCI Bridge, bus 2
      bus 2 slot 0 Qlogic ISP1020
probing IOD0 hose 0
  bus 0 slot 1   PCEB
    probing EISA Bridge, bus 1
  bus 0 slot 2   S3 Trio64/Trio32
  bus 0 slot 3   DECchip 21140-AA
configuring I/O adapters
  ncr0, hose 1, bus 0, slot 1
  isp0, hose 1, bus 2, slot 0
  floppy0, hose 0, bus 1, slot 0
  tulip0, hose 0, bus 0, slot 3
System temperature is 28 degrees C
AlphaServer 1200 Console V5.0-2, 17-SEP-1997 17:51:33

```

Power-up tests have detected a problem with your system!
Reset the system and observe the OCP display and/or type
SHOW CONFIG and SHOW POWER to obtain more information.
LP00>>>

3. The FSL console has been loaded. You can now update the console by going into LFU and selecting firmware from CD (cda0), another floppy (dva0) or the network (ewa0).

```

LP00>>>lfu
***** Loadable Firmware Update Utility *****
Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: cda0

Please enter the name of the firmware files list, or
Press <return> to use the default filename [AS1200FW]: <CR>

Copying AS1200FW from DKA500.5.0.1.1 .
Copying [as1200]TCREADME from DKA500.5.0.1.1 .
Copying [as1200]TCSRMMROM from DKA500.5.0.1.1 .....
Copying [as1200]TCARCROM from DKA500.5.0.1.1 .....
Copying [options]CIPCA420 from DKA500.5.0.1.1 .
Copying [options]DFXAA320 from DKA500.5.0.1.1 .
Copying [options]KZPSAA12 from DKA500.5.0.1.1 .

```

Function	Description
Display	Displays the system's configuration table.
Exit	Done exit LFU (reset).
List	Lists the device, revision, firmware name, and update revision.
Lfu	Restarts LFU.
Readme	Lists important release information.
Update	Replaces current firmware with loadable data image.
Verify	Compares loadable and hardware images.
? or Help	Scrolls this function table.

4. A list here shows the srmflash console is corrupt

UPD> **list**

Device	Current Revision	Filename	Update Revision
AlphaBIOS	V5.32-0	arcrom	V5.32-0
srmflash	(56377.31685-4294951	srmrom	V5.0-2
		cipca_fw	A420
		dfxaa_fw	3.10
		kzpsa_fw	A12

5. Update the firmware

UPD> **update**

WARNING: updates may take several minutes to complete for each device.

Confirm update on: AlphaBIOS [Y/(N)] **y**

DO NOT ABORT!

AlphaBIOS Updating to V5.32-0... Verifying V5.32-0...
PASSED.

Confirm update on: srmflash [Y/(N)] **y**
srmflash update rev V5.0-2 is less than current rev
(56377.31685-4294951774.
Continue [Y/(N)] **y**

DO NOT ABORT!

srmflash Updating to V5.0-2... Verifying
V5.0-2... PASSED.

6. Verify the update

UPD> **verify**

AlphaBIOS Verifying V5.32-0... PASSED.
srmflash Verifying V5.0-2... PASSED.

7. Exit and after re-init the console is no longer corrupt

UPD> **exit**

Initializing...

SROM V1.1 on cpu0
SROM V1.1 on cpu1
XSROM V5.0 on cpu0
XSROM V5.0 on cpu1
BCache testing complete on cpu0
BCache testing complete on cpu1
mem_pair0 - 64 MB
mem_pair1 - 64 MB
mem_pair2 - 64 MB
mem_pair3 - 64 MB
20..20..21..21..23..
please wait 6 seconds for T24 to complete
24..24..
Memory testing complete on cpu1
Memory testing complete on cpu0
starting console on CPU 0
sizing memory
0 64 MB DIMM
1 64 MB DIMM
2 64 MB DIMM
3 64 MB DIMM
starting console on CPU 1
probing IOD1 hose 1
bus 0 slot 1 - NCR 53C810
bus 0 slot 4 - PCI-PCI Bridge
probing PCI-PCI Bridge, bus 2
bus 2 slot 0 - QLogic ISP1020

```
probing IOD0 hose 0
  bus 0 slot 1 - PCEB
    probing EISA Bridge, bus 1
  bus 0 slot 2 - S3 Trio64/Trio32
  bus 0 slot 3 - DECchip 21140-AA
configuring I/O adapters...
  ncr0, hose 1, bus 0, slot 1
  isp0, hose 1, bus 2, slot 0
  floppy0, hose 0, bus 1, slot 0
  tulip0, hose 0, bus 0, slot 3
System temperature is 28 degrees C
AlphaServer 1200 Console V5.0-2, 25-SEP-1997 12:42:27
P00>>>
```

How to Build and Use a FSL Floppy on An Digital Server 7000 Model 7300 and 5000 model 5300

Overview

The Digital Server 7300 is an NT ONLY version of the AlphaServer 4100 and the Digital Server 5300 is an NT ONLY version of the AlphaServer 1200. The Digital Server 7300 is essentially an AlphaServer 4100 and the Digital Server 5300 is essentially an AlphaServer 1200. The following procedures are valid on either platforms however you will need to do the OpenVMS procedure on a different system to create this floppy.. The examples show an AlphaServer 1200, however the same files and procedures are used on both the Digital Servers and AlphaServers

The fail-safe loader is a software routine that loads the SRM console image from floppy. Once the console is running you will want to run LFU to update FEPROM 0 with a new image. FEPROM 0 contains images of the SROM, XSROM, PAL, decompression, and SRM console code.

If the fail-safe loader loads, the following conditions exist on the machine:

- The SROM has passed its tests and successfully unloaded the XSROM. If the SROM fails to unload both copies of XSROM, it reports the failure to the control panel display and COM1 if possible, and the system hangs.
- The XSROM has completed its B-cache and memory tests but has failed to unload the PALcode in FEPROM 0 sector 1 or the SRM console code.
- The XSROM reports the errors encountered and loads the fail-safe loader.

FSL floppy Information

The Digital Server 7000 Model 7300 and 5000 Model 5300 systems do not have a jumper to enable the failsafe loader. Instead if the console is corrupt you will be asked to insert a FSL floppy. This will allow a temporary console to be loaded so you can type LFU and upgrade the firmware from CD, floppy or over the network. The following article describes three methods of building the floppy and procedures on how to use it. There are also pointers to documentation and the rhboot.exe, mkboot.exe and makeboot.exe images you will need.

You can order a FSL floppy - part number QZ-00WAA.HC.5.0 or you can build one using the following procedure.

How to Build a FSL loader Floppy Using OpenVMS

You will need to do the OpenVMS procedure on a different platform to create the failsafe loader floppy since the Digital Servers are NT only machines. You need to obtain the console file rhboot.exe file from Cybrary. It is located at http://Cybrary.inet.cpqcorp.net/DOWNLOAD/UTILITIES/SYSTEM/rhboot_v5.exe .

You can also locate it inside the following .zip files on Cybrary at http://Cybrary.inet.cpqcorp.net/DOWNLOAD/UTILITIES/SYSTEM/mkboot_rhboot.zip
http://Cybrary.inet.cpqcorp.net/DOWNLOAD/UTILITIES/SYSTEM/makeboot_rhboot.zip

This will give you a zip file with the rhboot.exe and either mkboot.exe (PC or ALPHA image) or makeboot.exe (Alpha image) You can also find the rhboot.exe file internally by going to Harmny::firm03:[rawhide.prerelease.fsl.v50] .

HARMNY::FIRM03:[RAWHIDE.PRERELEASE.FSL.V50]

\$README.TXT;3	3	26-SEP-1997	10:43:56.00
FSL RELNOTE.PS;1	60	26-SEP-1997	16:21:56.00
MAKE_FSL_FLOPPY.COM;2	2	26-SEP-1997	10:49:02.00
RHBOOT.EXE;1	1629	17-SEP-1997	17:51:39.00

Filename	Description
\$README.TXT	V5.0 Fail Safe Loader Readme file
FSL_RELNOTE.PDF	AlphaServer Fail Safe Loader Release Note (PDF) AV-R1FZB-TE
MAKE_FSL_FLOPPY.COM	.Com file to make a FSL floppy with OpenVMS
RHBOOT_V5.EXE	V5.0 Digital Server 7000 Model 7300 and 5000 Model 5300 Recovery Console Image

The latest rhboot.exe image (version 5 - 09/17/97) in this area will work for recovering corrupt consoles of revision v1.2-4, as well as all future versions.

The following command procedure will build an FSL floppy. This procedure needs to run on an Alpha VMS system. The file will prompt the user for the .exe file to write to the floppy. The rhboot.exe file is located at may30::firm03:[rawhide.prerelease.fsl.v50]rhboot.exe. The procedure will always format the floppy first (which takes a couple minutes).

The command procedure for building the FSL floppy diskette follows:

```
$!
$! make_rawhide_floppy.com
$!
$!      P1 = Alpha firmware EXE file to be writebooted to a floppy
$!
$ if P1 .eqs. "" then inquire P1 "Firmware file to writeboot"
$ inquire ignore "Insert blank HD floppy in DVA0, then continue"
$ set verify
$ init /density=hd/index=begin dva0: rhboot
$ mount dva0: rhboot
$ create /directory dva0:[as4x00]
$ copy /contig 'P1' dva0:[as4x00]rhboot.exe
$ mcr writeboot
n
y
dva0:[as4x00]rhboot.exe
$ dismount dva0:
$ set noverify
$ exit
```

How to Build a FSL Loader Floppy Using a PC Running WNT

Obtain the rhboot.exe and mkboot.exe files. This is a zip file that has rhboot.exe, mkboot.exe and mkboot.txt.

1. Format a floppy diskette
2. Go to the DOS prompt create a FSL floppy by typing the following.

```
C:\> mkboot rhboot.exe
Bad command or file name
mkboot V1.1: create a bootable floppy
Please insert a formatted diskette into drive A: and press and key: <CR>
Number of sectors per track for this disk is 18
Writing image to drive A:.. Press ^C to abort.
Track: 45 Head: 0 Sector: 16
Done.
```
3. Insert the floppy in the system with corrupt firmware and init.
4. At the LP00>>> prompt type LFU and update firmware from CD, another floppy or over ethernet.

How to Build a FSL floppy Using an Alpha running WNT

Obtain the rhboot.exe and makeboot.exe files. This is a zip file that has rhboot.exe and makeboot.exe.

1. Format a floppy diskette
2. Go to the DOS prompt create a FSL floppy by typing the following.
C:\> **makeboot -f rhboot.exe**
makeboot utility, version 002.
Executable file rhboot.exe, size 834048 <bytes> 1629 blocks.

Warning: All data on the floppy will be overwritten.

Continue? [Yes/No <default>]: **yes**

Geometry for Drive a:

Media Type 3.5, 1.44 MB, 512 bytes/sector

Cylinders 80 Tracks/Cylinder 2 Sectors/Track 18

Writing floppy...

100 % done

Note:

The makeboot command defaults to drive a, to specify a different device use -d b

3. Insert the floppy in the system with corrupt firmware and init.
4. At the LP00>>> prompt type LFU and update firmware from CD, another floppy or over ethernet.

Procedure

1. On init the console reports a problem with the console code and requests you insert the FSL floppy and reset the system

```
SROM V1.1 on cpu0
SROM V1.1 on cpu1
XSROM V4.9 on cpu1
XSROM V4.9 on cpu0
BCache testing complete on cpu1
BCache testing complete on cpu0
mem_pair0 - 64 MB
mem_pair1 - 64 MB
mem_pair2 - 64 MB
mem_pair3 - 64 MB
20..20..21..21..23..
please wait 6 seconds for T24 to complete
24..24..
Memory testing complete on cpu0
Memory testing complete on cpu1
Sctr 3 -CONSLE code CHKSM fail
FSL V2.0 on cpu0
FSL failed -- Insert FSL floppy -- Reset system
```

Note:

With only a graphics terminal you will not see the above console messages. Instead the OCP will show

FSL V2.0 on cpu0

Load FSL floppy

If you want to see the console output connect a serial terminal to the COM1 port on the DigitalServer 7300 or DigitalServer 5300.

2. Insert the FSL floppy and reset the system. The system will load the fsl console and give you an LP00>>> prompt.

```
SROM V1.1 on cpu0
SROM V1.1 on cpu1
XSROM V4.9 on cpu1
XSROM V4.9 on cpu0
BCache testing complete on cpu1
BCache testing complete on cpu0
mem_pair0 - 64 MB
mem_pair1 - 64 MB
mem_pair2 - 64 MB
mem_pair3 - 64 MB
20..20..21..21..23..
please wait 6 seconds for T24 to complete
24..24..
Memory testing complete on cpu0
Memory testing complete on cpu1
Sctr 3 -CONSLE code CHKSM fail
.....
starting console on CPU 0
sizing memory
  0      64 MB DIMM
  1      64 MB DIMM
  2      64 MB DIMM
  3      64 MB DIMM
Secondary CPU1 failed to join
probing IOD1 hose 1
  bus 0 slot 1 - NCR 53C810
  bus 0 slot 4 - PCI-PCI Bridge
    probing PCI-PCI Bridge, bus 2
      bus 2 slot 0 - QLogic ISP1020
probing IOD0 hose 0
  bus 0 slot 1 - PCEB
    probing EISA Bridge, bus 1
  bus 0 slot 2 - S3 Trio64/Trio32
  bus 0 slot 3 - DECchip 21140-AA
configuring I/O adapters...
  ncr0, hose 1, bus 0, slot 1
  isp0, hose 1, bus 2, slot 0
  floppy0, hose 0, bus 1, slot 0
  tulip0, hose 0, bus 0, slot 3
System temperature is 28 degrees C
AlphaServer 1200 Console V5.0-2, 17-SEP-1997 17:51:33

Power-up tests have detected a problem with your system!
Reset the system and observe the OCP display and/or type
SHOW CONFIG and SHOW POWER to obtain more information.
LP00>>>
```

3. The FSL console has been loaded. You can now update the console by going into LFU and selecting firmware from CD (cda0), another floppy (dva0) or the network (ewa0).

```
LP00>>>lfu
***** Loadable Firmware Update Utility *****
Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: cda0

Please enter the name of the firmware files list, or
Press <return> to use the default filename [AS1200FW]: <CR>

Copying AS1200FW from DKA500.5.0.1.1 .
Copying [as1200]TCREADME from DKA500.5.0.1.1 .
Copying [as1200]TCREADME from DKA500.5.0.1.1 .
Copying [as1200]TCSRMMROM from DKA500.5.0.1.1 .....
```



```

Copying [asl200]TCARCROM from DKA500.5.0.1.1 .....
Copying [options]CIPCA420 from DKA500.5.0.1.1 .
Copying [options]DFXAA320 from DKA500.5.0.1.1 ...
Copying [options]KZPSAA12 from DKA500.5.0.1.1 ...

```

Function	Description
Display	Displays the system's configuration table.
Exit	Done exit LFU (reset).
List	Lists the device, revision, firmware name, and update revision.
Lfu	Restarts LFU.
Readme	Lists important release information.
Update	Replaces current firmware with loadable data image.
Verify	Compares loadable and hardware images.
? or Help	Scrolls this function table.

4. A list here shows the srmflash console is corrupt

```
UPD> list
```

Device	Current Revision	Filename	Update Revision
AlphaBIOS	V5.32-0	arcrom	V5.32-0
srmflash	(56377.31685-4294951srmrom		V5.0-2
		cipca_fw	A420
		dfxaa_fw	3.10
		kzpsa_fw	A12

5. Update the firmware

```
UPD> update
```

WARNING: updates may take several minutes to complete for each device.

```
Confirm update on: AlphaBIOS [Y/(N)] y
```

```

DO NOT ABORT!
AlphaBIOS      Updating to V5.32-0... ..... Verifying V5.32-0...
PASSED.

```

```

Confirm update on: srmflash [Y/(N)] y
srmflash      update rev V5.0-2 is less than current rev
(56377.31685-4294951774.
Continue [Y/(N)] y

```

```

DO NOT ABORT!
srmflash      Updating to V5.0-2... ..... Verifying
V5.0-2... PASSED.

```

6. Verify the update

```
UPD> verify
```

```

AlphaBIOS      Verifying V5.32-0... PASSED.
srmflash      Verifying V5.0-2... PASSED.

```

7. Exit and after re-init the console is no longer corrupt

```
UPD> exit
Initializing...

  SROM V1.1 on cpu0
  SROM V1.1 on cpu1
XSROM V5.0 on cpu0
XSROM V5.0 on cpu1
BCache testing complete on cpu0
BCache testing complete on cpu1
mem_pair0 -    64 MB
mem_pair1 -    64 MB
mem_pair2 -    64 MB
mem_pair3 -    64 MB
20..20..21..21..23..
please wait 6 seconds for T24 to complete
24..24..
Memory testing complete on cpu1
Memory testing complete on cpu0
starting console on CPU 0
sizing memory
  0      64 MB DIMM
  1      64 MB DIMM
  2      64 MB DIMM
  3      64 MB DIMM
starting console on CPU 1
probing IOD1 hose 1
  bus 0 slot 1 - NCR 53C810
  bus 0 slot 4 - PCI-PCI Bridge
    probing PCI-PCI Bridge, bus 2
      bus 2 slot 0 - QLogic ISP1020
probing IOD0 hose 0
  bus 0 slot 1 - PCEB
    probing EISA Bridge, bus 1
  bus 0 slot 2 - S3 Trio64/Trio32
  bus 0 slot 3 - DECchip 21140-AA
configuring I/O adapters...
  ncr0, hose 1, bus 0, slot 1
  isp0, hose 1, bus 2, slot 0
  floppy0, hose 0, bus 1, slot 0
  tulip0, hose 0, bus 0, slot 3
System temperature is 28 degrees C
AlphaServer 1200 Console V5.0-2, 25-SEP-1997 12:42:27
P00>>>
```

Making a FailSafe Loader Floppy for a Compaq AlphaServer ES40

Overview

The Compaq AlphaServer ES40's failsafe loader can be invoked automatically when the console determines the firmware is corrupt or manually by putting jumpers J22 on pins 2-3. This will force the floppy to be read on power up.

This procedure requires three floppies. One will contain SRM firmware to bring the system to a >>>. Floppy two will contain the LFU firmware image to bring the system to the UPD> prompt. The third floppy will contain SRM and AlphaBIOS firmware images. You can also use the LFU floppy as the FSL disk. It will bring you to the LFU> prompt instead of the >>>. From there you can use the third floppy to update firmware and rescue the systems. Every ES40 ships with a failsafe loader floppy. You can order a floppy from LOS. The part number is QC-081AA-HC.

Files

- clsrmmrom.sys EV6 SRM firmware .sys file
- cl67srmmrom.sys EV67/EV68 SRM firmware .sys file
- clsrmmrom.exe EV6 SRM firmware .exe file
- cl67srmmrom.exe EV67/EV68 SRM firmware .exe file
- clarcrom.exe AlphaBIOS image
- clu.exe ES40 LFU image
- ile.exe ES40lp LFU image
- flu.exe ES40cv LFU image
- glu.exe TS20/TS40 LFU image
- mkboot.exe PC image to make bootable floppies
- mkbootfirm Unix image to make bootable floppies

Obtain the necessary files depending on system type from the firmware website at <http://ftp.digital.com/pub/Digital/Alpha/firmware/readmes/>. the files can also be obtained from Cybrary at http://cybrary.cxo.cpqcorp.net/HW/SYS/ALPHA/ES40/es40_fsl.html

How to build the FSL floppy using the clsrmmrom.sys or clsrmmrom.exe SRM image

WNT/W2K - PC (clsrmmrom.sys ONLY)

- a. Locate the clsrmmrom.sys and mkboot.exe files and copy them to a disk on your PC.
- b. Fat format a floppy diskette.
- d. From an MSDOS window execute the command **mkboot clsrmmrom.sys**
This will make the firmware update utility bootable.

For EV67 firmware rename the file ev67srm.sys before executing the mkboot command.
- e. Insert the floppy into the system with the corrupt firmware and power up the system. During init it will read the floppy and execute the code. It will stop at the >>> prompt.
- f. At the >>> prompt you can now boot firmware off of the CD to reload the console firmware.

WNT - Alpha (clsrmmrom.sys or clsrmrom.exe)

- a. Locate the files clsrmrom.sys and mkboot.exe or clsrmrom.exe and makeboot.exe. For EV67/EV68 CPUs use the cl67srmrom files.
- b. Copy the files to a disk on your Alpha.
- c. Fat format a floppy diskette.
- d. If using EV67/EV68 SRM firmware rename the files cl67srm.exe or cl67srm.sys.
- e. From an MSDOS window one of the following commands.
makeboot -f clsrmrom.exe for EV6 CPUs
makeboot -f cl67srmrom.exe for EV67/EV68 CPUs
mkboot clsrmrom.sys
This will make the firmware update utility bootable.
- f. Insert the floppy into the system with the corrupt firmware and power up the system. During init it will read the floppy and execute the code. It will stop at the >>> prompt.
- g. At the >>> prompt you can now boot firmware off of the CD to reload the console firmware.

Tru64 UNIX (clsrmrom.exe ONLY)

- a. Download the following files to a directory on your Tru64 UNIX system. They can be found on the firmware website interim directory at <http://ftp.digital.com/pub/DEC/Alpha/firmware/readmes/v6.1/es40/es40.zip>
 - mkbootfirm - Used to create a bootable floppy under Tru64Unix
 - clsrmrom.exe - EV6 SRM console image.
 - cl67srmrom.exe - EV67 SRM console image.
- b. Insert a floppy diskette.
- c. Change directory to where files were downloaded.
cd [to directory with files]
- d. You must set mkbootfirm file permissions to have execute permissions.
chmod 755 mkbootfirm
- e. Format the floppy.
fddisk -fmt /dev/rfd0a or

With Tru64 UNIX V5.0 you can do one of the following
fddisk -fmt /dev/rdisk/floppy0a or

cd /dev
./MAKEDEV fd0
fddisk -fmt /dev/rfd0a
- f. From directory where files are located execute the following
./mkbootfirm clsrmrom.exe |dd of=/dev/rfd0c bs=64k for EV6 CPUs
./mkbootfirm cl67srmrom.exe |dd of=/dev/rfd0c bs=64k for EV67 CPUs

Example of an update using the clsrmrom.exe as the failsafe loader

SROM V1.0 CPU # 00 @ 0500 MHz
SROM program starting
Reloading SROM

<----- System Powerup or reset

SROM V2.2-F CPU # 00 @ 0500 MHz
SROM program starting

```

Starting secondary on CPU #1
Starting secondary on CPU #2
Starting secondary on CPU #3
Bcache data tests in progress
Bcache address test in progress
CPU parity and ECC detection in progress
Bcache ECC data tests in progress
Bcache TAG lines tests in progress
Memory sizing in progress
Memory configuration in progress
Memory data test in progress
Memory address test in progress
Memory pattern test in progress
Memory thrashing test in progress
Memory initialization
loading program from floppy          <----- Reads FSL floppy
.....
Code execution complete (transfer control)

```

OpenVMS PALcode V1.61-2, Tru64 UNIX PALcode V1.54-2

```

starting console on CPU 0
initialized idle PCB
initializing semaphores
initializing heap
initial heap 200c0
memory low limit = 166000
heap = 200c0, 17fc0
initializing driver structures
initializing idle process PID
initializing file system
initializing hardware
initializing timer data structures
lowering IPL
CPU 0 speed is 500 MHz
create dead_eater
create poll
create timer
create powerup
access NVRAM
Memory size 512 MB
testing memory
...
probe I/O subsystem
probing hose 1, PCI
bus 0, slot 6 -- ewa -- DE500-BA Network Controller
probing hose 0, PCI
probing PCI-to-PCI bridge, bus 2
probing PCI-to-ISA bridge, bus 1
bus 0, slot 2 -- vga -- DEC PowerStorm
bus 2, slot 0 -- pka -- QLogic ISP10x0
bus 0, slot 4 -- pkb -- NCR 53C895
bus 0, slot 15 -- dqa -- Acer Labs M1543C IDE
bus 0, slot 15 -- dqb -- Acer Labs M1543C IDE
starting drivers
entering idle loop
initializing keyboard
starting console on CPU 1
initialized idle PCB
initializing idle process PID
lowering IPL
CPU 1 speed is 500 MHz
create powerup
starting console on CPU 2
initialized idle PCB
initializing idle process PID
lowering IPL
CPU 2 speed is 500 MHz
create powerup

```

```

starting console on CPU 3
initialized idle PCB
initializing idle process PID
lowering IPL
CPU 3 speed is 500 MHz
create powerup
os_type: UNIX - console CIPCA driver not started
Memory Testing and Configuration Status
  Array      Size      Base Address
-----
    0        256Mb    00000000000000000
    1        256Mb    00000000010000000

      512 MB of System Memory
Testing the System
Testing the Disks (read only)
Testing the Network
Partition 0, Memory base: 0000000000, size: 0200000000
initializing GCT/FRU at 1a4000
AlphaServer ES40 Console V5.5-68, built on Jul 21 1999 at 17:02:39

P00>>>                                     <--- Stops at >>>

```

How to build the FSL floppy using the LFU firmware update image

NT - PC or Alpha

- a. Go to the ES40 directory on the firmware website at <http://ftp.digital.com/pub/Digital/Alpha/firmware/>
- b. Locate the appropriate zip file. It will include the correct LFU.exe image and firmware files for the system. All the examples are for an ES40. Other platforms will use flu.exe, glu.exe or ilu.exe
Copy the file clu.exe, clsrmmrom.exe for EV6 CPUs or cl67srmrom.exe for EV67 CPUs, clarcrom.exe and mkboot.exe to a disk on your PC or Alpha.

You can also use makeboot.exe (Alpha Only) It is available on Cybrary at <http://cybrary.inet.cpqcorp.net/DOWNLOAD/UTILITIES/SYSTEM/makeboot.zip>
- c. Fat format three floppy diskettes
- d. From an MSDOS window execute the command **mkboot clu.exe** or **makeboot -f clu.exe**. This will make the firmware update utility bootable.
- e. Copy clsrmmrom.exe or cl67srmrom.exe and clarcrom.exe each to one floppy. If you are using CL67srmrom.exe be sure to rename it to cl67srm.exe.
- f. Insert the floppy with clu.exe into the system with the corrupt firmware and power up the system. It will read the floppy and boot to the UPD prompt.
- g. At the UPD> prompt type **exit** and the answer Y to the question
Do you want to do a manual update? [y/(n)]
- h. This will bring you back to the UPD> prompt. At the UPD prompt update rmc, srom and tig firmwares. These are include in the *lu.exe file
- i. Now insert the floppy with the file EV6 clsrmmrom.exe or EV67 cl67srm.exe and execute one of the commands
UPD> **update srm -path fat:clsrmmrom.exe/dva0** for EV6 CPUs
UPD> **update srm -path fat:cl67srm.exe/dva0** for EV67 CPUs
- j. When the update completes insert the floppy with the file clarcrom.exe and execute the command
UPD> **update abios -path fat:clarcrom.exe/dva0**
- k. Exit and reset the machine. If you moved jumpers return them to original position. Firmware has been upgraded.

Tru64 UNIX

This method requires two floppies. One with the LFU utility and the other with the system firmware.

- a. Download the following files to a directory on your Tru64 UNIX system. They can be found on the firmware website interim directory at <http://ftp.digital.com/pub/Digital/Alpha/firmware/interim/es40>
or the ES40 directory located at <http://ftp.digital.com/pub/Digital/Alpha/firmware/readmes/v6.1/es40/>
 - mkbootfirm - Used to create a bootable floppy under Tru64Unix
 - clu.exe - Loadable Firmware Utility plus RMC firmware.
 - clsrmmrom.exe - EV6 SRM console image.
 - Cl67srmrom.exe - EV67 SRM console image.
 - clarcrom.exe - AlphaBIOS console image.
- b. Insert floppy diskette 1.

- c. Change directory to where files were downloaded.
cd [to directory with files]
- d. You must set mkbootfirm file permissions to have execute permissions.
chmod 755 mkbootfirm
- e. Format the floppy.
fddisk -fmt /dev/rfd0a or
With Tru64 UNIX V5.0 you can do one of the following
fddisk -fmt /dev/rdisk/floppy0a or

cd /dev
./MAKEDEV fd0
fddisk -fmt /dev/rfd0a
- f. From directory where files are located execute the following
./mkbootfirm clu.exe |dd of=/dev/rfd0c bs=64k
- g. Insert floppy diskette 2.
- h. You need to create special device files for device fd0 if you have not already done this.
cd /dev
./MAKEDEV fd0
- i. Change directory to where files were downloaded.
cd [to directory with files]
- j. Create a soft link to /dev/fddrive with the following command
ln -s /dev/rfd0c /dev/fddrive
- k. Format the floppy.
fddisk -fmt /dev/rfd0a or

With Tru64 UNIX V5.0 you can do one of the following
fddisk -fmt /dev/rdisk/floppy0a or
fddisk -fmt /dev/rfd0a
- l. Add a DOS format onto the floppy disk
/usr/bin/mtools/mformat -s 18 a:
- m. Use mwrite to low level copy UNIX to DOS the SRM and ARC firmware.
/usr/bin/mtools/mwrite clsrmmrom.exe a:\clsrmmrom.exe EV6 CPUs
/usr/bin/mtools/mwrite cl67srmrom.exe a:\cl67srmrom.exe EV67 CPUs
/usr/bin/mtools/mwrite clarcrom.exe a:\clarcrom.exe

Example of an update using the clu.exe as the failsafe loader

```
SROM V1.0 CPU # 00 @ 0500 MHz
SROM program starting
Reloading SROM
```

```
SROM V2.2-F CPU # 00 @ 0500 MHz
SROM program starting
Starting secondary on CPU #1
Starting secondary on CPU #2
Starting secondary on CPU #3
Bcache data tests in progress
Bcache address test in progress
CPU parity and ECC detection in progress
Bcache ECC data tests in progress
Bcache TAG lines tests in progress
Memory sizing in progress
Memory configuration in progress
Memory data test in progress
Memory address test in progress
Memory pattern test in progress
```



```
Memory thrashing test in progress
Memory initialization
loading program from floppy
.....
Code execution complete (transfer control)

OpenVMS PALcode V1.61-4, Tru64 UNIX PALcode V1.54-4
```

```
starting console on CPU 0
initialized idle PCB
initializing semaphores
initializing heap
initial heap 200c0
memory low limit = 5c0000
heap = 200c0, 17fc0
initializing driver structures
initializing idle process PID
initializing file system
initializing hardware
initializing timer data structures
lowering IPL
CPU 0 speed is 500 MHz
create dead_eater
create poll
create timer
create powerup
access NVRAM
Memory size 512 MB
testing memory
...
probe I/O subsystem
probing hose 1, PCI
bus 0, slot 6 -- ewa -- DE500-BA Network Controller
probing hose 0, PCI
probing PCI-to-PCI bridge, bus 2
probing PCI-to-ISA bridge, bus 1
bus 0, slot 2 -- vga -- DEC PowerStorm
bus 2, slot 0 -- pka -- QLogic ISP10x0
bus 0, slot 4 -- pkb -- NCR 53C895
bus 0, slot 15 -- dqa -- Acer Labs M1543C IDE
bus 0, slot 15 -- dqb -- Acer Labs M1543C IDE
starting drivers
entering idle loop
initializing keyboard

*** Last RMC shutdown reason - CTERM failure ***
AC input available from Power Supply 0 at last shutdown
AC input available from Power Supply 1 at last shutdown
AC input available from Power Supply 2 at last shutdown
starting console on CPU 1
initialized idle PCB
initializing idle process PID
lowering IPL
CPU 1 speed is 500 MHz
create powerup
starting console on CPU 2
initialized idle PCB
initializing idle process PID
lowering IPL
CPU 2 speed is 500 MHz
create powerup
starting console on CPU 3
initialized idle PCB
initializing idle process PID
lowering IPL
CPU 3 speed is 500 MHz
create powerup
os_type: UNIX - console CIPCA driver not started
```

```

Checking dqa0.0.0.15.0 for the option firmware files. . .
dqa0.0.0.15.0 has no media present or is disabled via the RUN/STOP switch
dqa0.0.0.15.0 has no media present or is disabled via the RUN/STOP switch
Checking dva0 for the option firmware files. . .
If you have a floppy containing option firmware,
Please insert it now and hit <return> when ready. <return>
Option firmware not copied.

```

***** Loadable Firmware Update Utility *****

Function	Description
Display	Displays the system's configuration table.
Exit	Done exit LFU (reset).
List	Lists the device, revision, firmware name, and update revision.
Readme	Lists important release information.
Update	Replaces current firmware with loadable data image.
Verify	Compares loadable and hardware images.
? or Help	Scrolls this function table.

```

UPD> exit
Do you want to do a manual update? [y/(n)] y

```

***** Loadable Firmware Update Utility *****

Function	Description
Display	Displays the system's configuration table.
Exit	Done exit LFU (reset).
List	Lists the device, revision, firmware name, and update revision.
Readme	Lists important release information.
Update	Replaces current firmware with loadable data image.
Verify	Compares loadable and hardware images.
? or Help	Scrolls this function table.

```

UPD> update srm -path fat:clsrmmrom.exe/dva0      for EV6 CPUs
UPD> update srm -path fat:cl67srm.exe/dva0      for EV67 CPUs

```

```

Confirm update on:
SRM
[Y/(N)]y
WARNING: updates may take several minutes to complete for each device.

```

DO NOT ABORT!

```

SRM          Updating to v5.5-107...  Verifying v5.5-107...  PASSED.

```

```

UPD> update abios -path fat:clarccrom.exe/dva0

```

```

Confirm update on:
Abios
[Y/(N)]y
WARNING: updates may take several minutes to complete for each device.

```

DO NOT ABORT!

```

Abios          Updating to v5.70...  Verifying v5.70...  PASSED.

```

```

UPD> exit

```

Making a FailSafe Loader Floppy for a Compaq AlphaServer ES45

Overview

The Compaq AlphaServer ES45's failsafe loader can be invoked automatically when the console determines the firmware is corrupt or manually by putting jumpers J22 on pins 2-3. This will force the floppy to be read on power up. There is a zip file available on the firmware website that has all the necessary file.

How to build the floppy using es45fsl.exe file with mkboot.exe or makeboot.exe

WNT/W2k - PC

- a. Obtain the es45fsl.zip file from the firmware website at
<http://ftp.digital.com/pub/DEC/Alpha/firmware/readmes/v6.1/es45/es45fsl.zip>.
- b. Unzip the archive and copy the files to your PC.
- c. FAT format a floppy.
- d. Open a DOS window and use the MKBOOT command to create the floppy

```
C:\> mkboot es45_fsl.exe
mkboot V1.1: create a bootable floppy
Please insert a formatted diskette into drive A: and press any key : <CR>
Number of sectors per track for this disk is 18
Writing image to drive A:.. Press ^C to abort.
Track: 43 Head: 0 Sector: 13
Done.
```
- e. Insert the floppy into the system and on power up it will read the FSL image.
- f. Exit and reset the machine. If you moved jumpers return them to original position. Firmware has been upgraded. If TIG firmware was upgraded power cycle the machine.

WNT - Alpha

- a. Locate the files clsrmmrom.sys and mkboot.exe or clsrmmrom.exe and makeboot.exe.
- b. Copy the files to a disk on your Alpha.
- c. Fat format a floppy diskette.
- d. From an MSDOS window issue one of the following commands.

```
makeboot -f es45_fsl.exe
mkboot es45_fsl.exe
```

This will make the firmware update utility bootable.
- e. Insert the floppy into the system with the corrupt firmware and power up the system. During init it will read the floppy and execute the code. It will stop at the >>> prompt.
- f. At the >>> prompt you can now boot firmware off of the CD to reload the console firmware or type B DVA0 to load firmware off the floppy.
- g. Select the default bootfile of ES45FW.TXT
- h. At UPD type exit then Y to enter manual mode.
- i. Update all firmwares.

UNIX - Alpha

- a. Obtain the es45fsl.zip file from the firmware website at
<http://ftp.digital.com/pub/DEC/Alpha/firmware/readmes/v6.1/es45/es45fsl.zip>.
- b. Unzip the archive and copy the es45fsl.exe file to your Alpha.
- c. Also locate the amkeboot.exe program. Download the following files to a directory on your Tru64 UNIX system. They can be found on the firmware website interim directory at
<http://ftp.digital.com/pub/Digital/Alpha/firmware/interim/es40>
or the ES40 directory located at
<http://ftp.digital.com/pub/Digital/Alpha/firmware/readmes/v6.1/es40/>
 - mkbootfirm - Used to create a bootable floppy under Tru64Unix
 - es45fsl.exe - ES45 FSL console image.
- b. Insert a floppy diskette.
- c. Change directory to where files were downloaded.
cd [to directory with files]
- d. You must set mkbootfirm file permissions to have execute permissions.
chmod 755 mkbootfirm
- e. Format the floppy.
fddisk -fmt /dev/rfd0a or

With Tru64 UNIX V5.0 you can do one of the following
fddisk -fmt /dev/rdisk/floppy0a or

cd /dev
./MAKEDEV fd0
fddisk -fmt /dev/rfd0a
- f. From directory where files are located execute the following
./mkbootfirm es45fsl.exe |dd of=/dev/rfd0c bs=64k

Updating the FailSafe Booter (FSB) on a Compaq AlphaServer DS20

Overview

In order for the failsafe booter code to work on the DS20/DS20E, new FSB code must first be loaded. The FSB code must be at least rev 3.2 to properly work. The FSB code is part of the V5.6 firmware update. The code can be loaded off CD or from floppy. You will need to execute a **UPDATE FSB** or **UPDATE *** command at the UPD> prompt.

Procedure to update FSB code

CD

1. Boot the V5.6 firmware update CD.
2. Execute a list command at the UPD> prompt. FSB_FW may or may not show up at this time.
3. Update the SRM, AlphaBIOS and any options. If the FSB_FW file doesn't show up you must exit and reboot the CD. If it does show up you can execute an UPDATE FSB command.
4. If you must reboot the firmware CD, you should see FSB_FW when you do a list. Execute the UPDATE FSB command.
5. exit

Floppy

The files supplied from the firmware website will require 2 floppies unless you edit the pc264fw.txt file.

1. Copy the files ds20srm.zip and ds20opt.zip to your system or go to the DS20 directory of the Firmware Website to get them.
2. Open the zip files and extract all the files to two fat formatted floppies.
3. Insert the 1st floppy in the drive and execute the LFU command
4. When it asks for file name enter pc264fw.txt or return
5. When it asks for the options floppy insert it.
6. At the UPD> prompt type list
7. Then update SRM, AlphaBIOS, options and FSB
8. Finally type verify to see if update was successful and exit

If you want to modify the pc264fw.txt file to include SRM, AlphaBIOS and FSB you can do the update with one floppy.

Making a FailSafe Booter Floppy for a Compaq AlphaServer DS20

Overview

The Compaq AlphaServer DS20's failsafe booter can be invoked automatically when the console determines the firmware is corrupt or manually by setting switch S2-1 to on. This will cause the floppy to be read during init and the console code will be loaded into memory and executed. The system will come to a >>>. From here you should be able to boot the firmware CD and update the console firmware. It will search the floppy for a list of filenames and attempt to load them in.

How to build the FSL floppy

- a. Copy the file pc264srm.rom onto a 1.44 MB FAT formatted floppy disk and rename it to dp264srm.rom or fwupdate.exe.
- b. Power up the machine with the floppy inserted into DVA0.
- c. The floppy will search for the following files

<u>Filename</u>	<u>OCP output</u>
DP264srm.rom	srm.rom
DP264srm.sys	srm.sys
DP264nt.rom	nt.rom
DP264nt.cmp	nt.cmp
DP264dbm.cmp	dbm.cmp
DP264dbm.rom	dbm.rom
fwupdate.exe	fwupdate.exe

- d. When it finds one of these files it will be read into memory and executed. If the correct image is provided you will come to a >>>.
- e. Now you should be able to boot the console CD and update firmware.

Making a FailSafe Booter Floppy for a Compaq AlphaServer DS10

Overview

The Compaq AlphaServer DS10's failsafe booter can be invoked automatically when the console determines the firmware is corrupt or manually by setting switch SW3 #8 to on. This will cause the floppy to be read during init and the console code will be loaded into memory and executed. The system will come to a >>>. From here you should be able to boot the firmware CD and update the console firmware.

How to build the FSL floppy

- a. Copy the file pc264srm.rom onto a 1.44 MB FAT formatted floppy disk and rename it fwupdate.exe.
- b. Power up the machine with the floppy inserted into DVA0.
- c. The floppy will be read and the system will execute the code and come to a >>>.
- d. Now you should be able to boot the console CD and update firmware.

Making a FailSafe Loader Floppy on a Digital Personal WorkStation

Overview

This document contains the procedure for repairing a Digital Personal Workstation A or AU series workstation (433a/au, 500a/au, 600a/au, etc) which is unable to function due to corrupted firmware in the MLB (main logic board) flash ROM. Flash ROMs can be corrupted by:

- System power outage or glitch during a firmware upgrade. Cord kicked out, reset pressed, power hiccup from utility, etc).
- Upgrading with incorrect or corrupt firmware. (bad FTP download, use of wrong utility, etc)
- In rare cases, updating from extremely old or unreleased firmware to very new firmware.

Firmware Recovery Procedure

Corrupted POST code will generally result in no activity on the MLB LEDs after power on. This is the most serious corruption and must be recovered by replacing the Motherboard (MLB). If there are MLB LEDs lit but upper level firmware (AlphaBIOS or SRM) does not start, look up the LED code in the service guide to determine the cause. Also, listen for beep codes. On older MLB and riser combinations, the beep codes are difficult to hear unless you place your ear near the speaker. This is a hardware design flaw which was corrected sometime after first shipment. If any LED or beep codes are present, POST is probably not corrupted, but attempting recovery is not harmful.

Isolating POST Corruption

Corrupted AlphaBIOS or SRM firmware can result in any one or more of the following:

- LED code of 1100 1101 (1=on), and SRM or AlphaBIOS won't start.
- Beep code sequence of 1-1-4 (listen carefully at lower front of box a few seconds after power on) indicating corrupt firmware.
- The floppy drive LED illuminating after several seconds (the POST code has detected corrupt firmware and is trying to load new firmware from a recovery diskette).

This type of corruption can generally be recovered without having to install the recovery SROM on the MLB. In any of the cases above, to repair corrupt firmware, follow these steps:

Post (SROM) not corrupted

1. Create a bootable firmware recovery diskette using one of the procedures below.
2. Insert the floppy into the target system and power on the system.
3. The recovery SROM loads the firmware update image from the recovery diskette you created. The floppy drive light will remain lit until the firmware load is complete. It may take a minute or two to load.
4. The firmware update utility will begin executing after it has loaded, and will appear on the target system's VGA monitor. It may take 10-20 seconds for your monitor to display the update utility's menu. You will need to use the target system's keyboard for input.
5. Update the firmware.

POST (SRROM) corrupted

1. If POST code is corrupted, then replace the MLB and return the bad MLB with a note saying the SRROM is corrupt.

Miata Main Logic Board with EV5 CPU	433MHz	54-24767-01
Miata a/au Main Logic Board with EV5 CPU	500MHz	54-24767-02
Chilled Miata Main Logic Board		54-25222-05
Miata GL Main Logic Board (EV56)	400MHz	54-25222-01
Miata GL Main Logic Board (EV56)	500MHz	54-25222-02
Miata GL Main Logic Board (EV56)	600MHz	54-25222-03

2. Create a bootable firmware recovery diskette using one of the procedures below.
3. Insert the floppy into the target system.
4. The recovery SRROM loads the firmware update image from the recovery diskette you created. The floppy drive light will remain lit until the firmware load is complete. It may take a minute or two to load.
5. The firmware update utility will begin executing after it has loaded, and will appear on the target system's VGA monitor. It may take 10-20 seconds for your monitor to display the update utility's menu. You will need to use the target system's keyboard for input.
6. Update the firmware.

IMPORTANT: It is best to consult the release notes for the firmware update utility you downloaded and read them before proceeding. The release notes will contain a matrix of supported operating system versions along with minimum required firmware revision. There will also be specific instructions for operating the firmware update utility. In many cases it may be essential that NT HAL be updated along with the AlphaBIOS firmware. Failure to do so will render NT unbootable.

Procedures to build the floppy

Make a Bootable Floppy Using OpenVMS

1. Locate the firmware.exe file on CD or on the WEB. See Pointer at bottom of this page.
2. Rename the downloaded file to fwupdate.exe. The following example assumes the floppy is called DVA0.
3. Enter the following commands in the directory containing fwupdate.exe to make a bootable floppy. You will need system privileges.

```
$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) fwupdate.exe
$ init/dens=HD/index=begin dva0: fwupdate
$ mount dva0: fwupdate
$ create/dir dva0:[digitalpw]
$ copy/contiguous fwupdate.exe dva0:[digitalpw]
$ mcr writeboot
Update VAX portion of boot block (default is Y) : No
Update AXP portion of boot block (default is Y) : Yes
[enter AXP bootfile:] dva0:[digitalpw]fwupdate.exe
$ dismount dva0:
```

Make a Bootable Floppy Using Tru64 UNIX

1. Locate the firmware.exe file on CD or on the WEB. See Pointer at bottom of this page.
2. Copy the firmware.exe file from the appropriate directory to your system and rename it fwupdate.exe
3. Download the file mkbootfirm.tar from Cybrary. It is also available at the firmware website.
<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/mkbootfirm.tar>
4. You can untar mkbootfirm on your target Tru64 UNIX system with the command:
tar xvf mkbootfirm.tar
5. Make sure you have a floppy that has been low-level formatted. For example, to low-level format a floppy in drive zero type
fdisk -fmt /dev/rfd0c
6. Change default to directory with mkbootfirm.exe
cd mkbootfirm
7. Run mkbootfirm on the .exe firmware image that you downloaded. mkbootfirm uses a .exe firmware image to create a file that can be dd'd to floppy.

The following will create a bootable floppy from a downloaded .exe firmware image:
./mkbootfirm fwupdate.exe | dd of=/dev/rfd0c bs=64k

Note:

Assumes mkbootfirm.exe is in current directory and floppy is in drive zero

Make a Bootable Floppy Using Windows 95 or Windows NT on an ALPHA.

1. Locate the firmware.exe file on CD or on the WEB. See Pointers at bottom of this page.
2. Copy the firmware to your system.
3. Locate makeboot.exe and put it on the disk (C: in this example). You can also use mkboot.exe on the Alpha.
4. Copy the firmware to the same drive as makeboot and rename it to fwupdate.exe
5. Pull up a MSDOS window and use these two files to create bootable FSL floppy.
6. Insert a writeable FAT formatted floppy in the drive and execute the following command in the MSDOS window..
C:\makeboot -f fwupdate.exe

Warning this will overwrite data on floppy continue?: **Yes**

The makeboot command defaults to drive a, to specify a different device use -d b:

Make a Bootable Floppy Using DOS, Windows 3.1, Windows 95 or Windows NT on a PC.

1. Locate the firmware.exe file on CD or on the WEB. See Pointer at bottom of this page.
2. Copy the firmware.exe file from the appropriate directory to your system and rename it fwupdate.exe
3. Locate mkboot.exe and put it on the disk (C: in this example)
4. Copy the firmware to the same drive as mkboot and rename it to fwupdate.exe
5. Pull up a MSDOS window and use these two files to create bootable FSL floppy.
6. Insert a writeable FAT formatted floppy in the drive and execute the following command in the MSDOS window..
C:\mkboot fwupdate.exe
Bad command or file name
mkboot V1.1: create a bootable floppy
Please insert a formatted diskette into drive A: and press and key: <CR>
Number of sectors per track for this disk is 18
Writing image to drive A:.. Press ^C to abort.
Track: 45 Head: 0 Sector: 16
Done.

Updating System Firmware

1. Once the update utility has started, something similar to the following will be displayed on the target system's monitor:

```
(boot pmem:180000 -flags unit=1)
bootstrap code read in
base = 180000, image_start = 0, image_bytes = 800000
initializing HWRPB at 2000
initializing page table at 7c8000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code
```

*** Digital Personal WorkStation 433au -- Firmware Update ***

Use HELP or ? for help

```
Update
Verify
List
Show
DEbug
NDEbug
?
Apu->
```

2. To recover the SRM and AlphaBIOS firmware, type UPDATE. The following information will be displayed as the firmware is being updated. The actual information may change between versions.

```
Apu-> update
APU-I ARE YOU READY TO PROGRAM (SRM ) ROM DEVICE ? (Y/N) y
APU-I ERASING (SRM ) ROM DEVICE
APU-I PROGRAMMING (SRM ) ROM DEVICE
APU-I VERIFY LOADED (SRM ) ROM IMAGE
APU-I VERIFY LOADED (SRM ) ROM IMAGE DONE
APU-I PROGRAMMING (SRM ) ROM COMPLETED
APU-I ERASING (ARC /AlphaBIOS) ROM DEVICE
APU-I PROGRAMMING (ARC /AlphaBIOS) ROM DEVICE
APU-I VERIFY LOADED (ARC /AlphaBIOS) ROM IMAGE
APU-I VERIFY LOADED (ARC /AlphaBIOS) ROM IMAGE DONE
APU-I PROGRAMMING (ARC /AlphaBIOS) ROM COMPLETED
APU-I ERASING (SROM ) ROM DEVICE
APU-I PROGRAMMING (SROM ) ROM DEVICE
APU-I VERIFY LOADED (SROM ) ROM IMAGE
APU-I VERIFY LOADED (SROM ) ROM IMAGE DONE
APU-I PROGRAMMING (SROM ) ROM COMPLETED
```

3. Alternatively, you may choose to recover only SRM or AlphaBIOS, and not both. This may be the best option if the customer wishes to retain an older version of firmware which did not get corrupted. In this case, specify which one you'd like to recover after the update command. For example, "**update alphabios**" or "**update srm**".
4. To recover the POST code, type "update srom". Depending on the console version this step may not be necessary..

```
Apu-> update SROM
APU-I Are you ready to Program Device? (y/n)y
APU-I Programming SROM device
APU-I Programming SROM device completed
Apu->
```

5. Your target system's firmware is now recovered. Restore your system to the same configuration it was in before you began this recovery operation. Follow each step below if applicable to restore your system:
 - Remove the recovery floppy from the target system.
 - Power machine on, and verify proper operation.

Locations For Firmware on the Internet/Intranet

<http://cybrary.inet.cpqcorp.net/DOWNLOAD/FIRMWARE/SYSTEMS/ALPHA/default.html>

<http://ftp.digital.com/pub/Digital/Alpha/firmware/>

<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/>

<http://ftp.digital.com/pub/DEC/Alpha/firmware/>

<ftp://ftp.digital.com/pub/DEC/Alpha/firmware/>

<http://www.workstation.digital.com/firmware.html>

<http://www.compaq.com/support/files/alphant/firmware/index.html>

Creating a Bootable Firmware Floppy For the AlphaStation 200, 250 and 255

Overview

Attempting to switch consoles on half-flash machines (all AlphaStation 255's and some AlphaStation 200's) can be difficult without the firmware update CD. This article will provide a .zip file that will allow you use an Intel PC to build a bootable firmware update floppy to switch from the SRM console used by OpenVMS and Tru64 UNIX to the ARC console which is used by Windows NT.

Background

Most Alpha machines can have both the SRM and ARC consoles loaded in the flash ROMs at the same time. However all AlphaStation 255's and some AlphaStation 200's have only 2 flash ROMs and these machine can not have BOTH consoles loaded at the same time. You must select either the SRM console for OpenVMS and Tru64 UNIX or the ARC console for Windows NT. If you need to switch between the 2 consoles you must do so by reloading the appropriate firmware. The half-flash machines are being resold by Onsale, Web Auction and others. These machines will come with the SRM console loaded. If the user wants to run NT they will need to load and ARC console. Usually the customer does not have the firmware CD or systems running OpenVMS or Tru64 UNIX in order to create bootable floppies. The following procedure will allow the customer/engineer to make a bootable floppy using an Intel PC.

Description of the Files

The .zip files allow you to make bootable floppies using an Intel based PC. The following files are available on Cybrary.

as200fw.zip	AlphaStation 200/250
as200fw.dd	
dd.exe	
readme.txt	
as200fw_readme.txt	Readme
as255fw.zip	AlphaStation 255
as255fw.dd	
dd.exe	
readme.txt	
as255fw_readme.txt	Readme
ddfordsos.zip	dd program for DOS (Intel)
dd.exe	
dd.man	

How the files were created

The firmware files for the AlphaStation 200/250 and the AlphaStation 255 V5.2 CD were used to create a bootable unix floppy using the procedures documented on the firmware pages. Once the floppy was created the UNIX dd command was used to create the as200fw.dd and as255fw.dd files. This file was then zipped with a DOS version on the dd utility. By executing the dd command on a DOS Intel platform you can copy the bootable UNIX disk image to a fat formatted floppy so you can boot the firmware update utility from the >>>.

Procedure for creating the floppy

1. Fat format a 1.44 MB floppy using an Intel PC.
2. Unzip the appropriate file for the system you are working on.
as200fw.zip for the AlphaStation 200 and 250
as255fw.zip for the AlphaStation 255
3. Copy the contents of the zip files to the same disk and directory
4. Pull up a MSDOS window and execute the following command
C:\> dd if=as255fw.dd of=a: bs=36b count=80

5. Place the floppy in the systems floppy drive and boot it.
 >>> **boot dva0**
6. At the APU> prompt update the ARC console firmware
 Apu-> **update arc**
7. Exit the power cycle the machine.
8. You will now come up into the ARC console to allow building or booting Windows NT.

AlphaServer 2100 "Cpu Type Not Supported" with B2041-AA 5/375 CPU

Problem:

After upgrading a AlphaServer 2100 to a 5/375 B2041-AA processor, you get a message "cpu type not supported" when booting Digital UNIX 3.2D-1.

This occurred on SRM 5.0-80 and SRM 5.2.

The install guide which comes with the cpu modules AS2x00 Series CPU Upgrade (EK-KN4xx-AA) list an nvram patch procedure, however the user guide is talking about DIGITAL UNIX 3.2C minimum or 3.2F the recommended. The install guide does not reference DIGITAL UNIX 3.2D-1. DIGITAL UNIX 3.2d-1 doesn't know what the KN490-AA (B2041-AA) is and dumps the error "unsupported cpu type."

Solution:

In order to use 3.2D-1 with the new 375 MHz cpu's (B2041-AA), the following locations must be modified in the nvram patch document that is shipped with the AS2x00 series upgrade guide.

First upgrade the SRM firmware to 5.2, then change the following NVRAM addresses.

Original address deposits:	new deposits
-----	-----
P00>> edit nvram	
*1000 echo "Applying KN490 patch"	
*1010 d -p -l 2270 5 5	2230
*1020 d -p -l 24f0 5 5	24b0
*1030 d -p -l 2770 5 5	2730
*1040 d -p -l 29f0 5 5	29b0
*exit	
P00>> init	

Note:

If you upgrade to a later version of Digital UNIX then remove this patch.

```
P00>> edit nvram
editing 'nvram'
184 bytes read in
*list
*1000 echo "Applying KN490 patch"
*1010 d -p -l 2230 5 5
*1020 d -p -l 24b0 5 5
*1030 d -p -l 2730 5 5
*1040 d -p -l 29b0 5 5
*10
*20
*30
*40
*50
*exit
0 bytes written out to nvram
```


Procedure to Update Firmware on a 2100

When an engineer replaces a B2110-AA module it doesn't have ARC firmware loaded. They will need to load firmware and update the SRM and ARC consoles. When doing the update then can corrupt the firmware if the following procedure is not followed. What happens is they boot LFU off CD and tell it UPDATE SRM. They get a message that says the firmware on the module was greater than on the CD. Are you sure? They have been answering NO here then doing an UPDATE ARC. They now have a version of SRM that is not compatible with the version of ARC. I have been told you can insert an EV5 CPU in place of the EV4 CPU in this example and get it to come up to a point where you can correct the firmware. Otherwise you must replace the standard I/O module.

Basic steps to be followed:

- Install J5 Jumper on module (for fail-safe loader)
- Install module
- Power up system
- Install CD-ROM
- Invoke LFU
- Update Firmware
- Power down
- Remove J5 jumper

How to Upgrade Firmware For AlphaServer 2x00 Model 4/2XX Systems

```
P00>>> boot -fl 0,a0 dka600
```

```
Bootfile: [alpha2100]as2100_e4_v5_4.exe (depends on CD and CPU type)
```

```
UPD> update *srm*
```

At the confirmation prompt, enter Y

Confirm update on:

```
[Y/(N)]: Y
```

Caution: The update will take several minutes. Do not terminate update
Failure to do so may result in an inoperable system.

Note

You may get a message indicating that the version of SRM is greater than the version on the CD. It will ask you if you want to continue with the upgrade (Not sure of exact statement). Let it downgrade the version. Failure to do so may render the module inoperative.

```
UPD> update *arc*
```

At the confirmation prompt, enter Y

Confirm update on:

```
sbarcflash
```

```
[Y/(N)]: Y
```

Caution: The update will take several minutes. Do not terminate update
Failure to do so may result in an inoperable system.

```
UPD> exit
```

Answer Yes to the following to update the fail-safe loader:

Do you want to do a manual update [y/(n)] **y**

AlphaServer 2100 Console V5.3-2 , built on May 1 1998 at 19:39:34

```
P00>>> update fsl or update -path sbfslrom -target sbfslflash  
(update -path sbfslrom -target sbfslflash)
```

```
new: 5.3-2
```

```
old: 4.1-21
```

New image has a smaller version than existing image

Consistency checks failed, continuing anyway.

FEPROM UPDATE UTILITY

-----> CAUTION <-----

EXECUTING THIS PROGRAM WILL CHANGE YOUR CURRENT ROM

Do you really want to continue [Y/N] ? : y

DO NOT ATTEMPT TO INTERRUPT PROGRAM EXECUTION!

DOING SO MAY RESULT IN LOSS OF OPERABLE STATE.

The program will take at most several minutes.

Setting to all 0s...

Setting to all 1s...

Programming...

Verifying...

Update successful

P00>>> **lfu**

P00>>> **exit**

Do you want to do a manual update? [y/(n)] **y**

Setting to all 1s...

Programming...

Verifying...

Update successful

Please reset the system.....

Press the DC ON/OFF button to off then on to reset the system.

AlphaServer 2100 FailSafe Loader (FSL) Overview and Functions

Overview

The fail-safe loader (FSL) is redundant or backup console that allows you to update or restore the SRM console if it is corrupted. The AlphaServer 2000, 2100 and 2100A systems utilize a ROM on either the standard I/O, motherboard or backplane module, depending on system type, to store the failsafe loader console.

As long as the fail-safe loader is intact you will get to an **ash>** prompt on the console and an OCP display of **FAIL I/O_00 0004** when the FSL has been activated. I have also seen **FAIL I/O_00 04** and **FAIL I/O_04** documented. The FSL is activated under the following circumstances.

- SRM console firmware is corrupted during upgrade (power failure, load failed)
- Error in the nonvolatile nvram file
- Hardware failure during power-up prevents the console firmware from loading.
- A configuration error, such as an incorrect environment variable setting.
- Driver error (console driver)
- FSL enable switch is activated.

If you are at the ash> prompt you can restore the corrupt console from CD. If you are unable to get to the ash> prompt, the FSL is NOT intact and the module that houses the firmware will need to be replaced.

Note

Booting from the CD was not supported in FSL versions before V3.6 . If you have an older version of the FSL console you will need to boot firmware from a floppy.

Fail-Safe Loader Functions

From the FSL program, you can:

- Edit the nvram file (using the edit command)
- Assign a correct value to an environment variable (using the show and set commands)
- Start individual drivers using the init -driver ew command to start the MOP driver or init -driver dv to start the floppy driver. The init -driver 6 command in FSL mode starts all available drivers.

Note

The nonvolatile file, nvram, is shipped from the factory with no contents. The customer can use the edit command to create a customized script or command file that is executed as the last step of every power-up.

Automatic Activation

If the SRM console firmware is corrupted, the fail-safe loader is automatically loaded into memory. The system power-up display appears, followed by the fail-safe loader ash> prompt:

AlphaServer 2100 Console V4.3-111, built on Sep 12 1995 at 15:38:55
ash>

Also, the power-up/diagnostic display on the operator control panel displays a **FAIL I/O_00 0004** message.

At the ash> prompt, reinstall the console firmware files, using your latest firmware update media.

Manual Activation

If necessary, you can activate the FSL manually as follows:

- Make sure the system power is off.
- Locate the FSL jumpers (AlphaServer 2000/2100) or switches (AlphaServer 2100A)
- Enable the FSL as follows depending on system type
 - Install jumper J6 on the AlphaServer 2000 Backplane
 - Install jumper J6 on the AlphaServer 2100/2100A LP Standard IO
 - Move the FSL enable switch (top switch) on the backplane module to the right (enabled). (2100A)
 - Move the FSL enable switch (right switch) on the backplane module down (enabled). (2100A RM)
- Power on the system.
- You will come to an ash> prompt.
- Perform limited commands from the FSL console, as described in the next section.
- When you have finished, power down the system and return the jumpers or switches to their original position.

The FSL permits you to get to a console, with limited functionality, when one of the following is the cause of a problem getting to the console program under normal power-up:

- A power failure or accidental power down during a firmware upgrade
- An error in the nonvolatile nvram file
- An incorrect environment variable setting
- A driver error

Note

The FSL for the 2100 and 2100A are not compatible.
The same is true for the FSL loader for the EV4 and EV5 CPUs.

When Do You Update the FSL

The FSL ROM does NOT need to be updated everytime you upgrade firmware. As long as you have a valid FSL console loaded you normally do not need to update it. These systems can use either EV4 or EV5 CPUs. The console code for these CPUs are different. If you replace the module or backplane on a system that houses the FSL ROM you will get a module that is loaded at the factory with both the EV4 and EV5 code so that module will work regardless of which CPU you use. In this case the first thing you will need to do is load firmware AND update the FSL.

The following are the reasons you will need to update the FSL.

- When you upgrade from EV4 to EV5 CPUs
- When you downgrade from EV5 to EV4 CPUs
- When you replace the Standard IO, Backplane or Motherboard/Backplane Module
- If you do not get an ash> when the FSL is manually activated

How Do You Update The FSL ROM

The AlphaServer 2000/2100/2100A fail-safe loader code is resident on a ROM on either the standard I/O, motherboard or backplane module depending on system type. If you need to update the FSL ROMs for any of the above reasons you will need to follow one of the following methods.

You can update them from the UPD> prompt or from the P00>>> after telling it you want to do a manual update. The manual update allows you to run LFU scripts from the P00>>> prompt. Some of the scripts available are **fsl_update**, **cpu_upgrade**, **cpu_downgrade**, **make_dual_srm**.

Method 1

1. Power off the machine.
2. Set the jumper or switch to enable failsafe ROM writes.
3. Boot the firmware CD
P00>>> **boot -fl 0,a0 dka600**
4. Select the firmware file you desire
Bootfile: **[alpha2100]as2100_e4_v5_4.exe**
5. At the UPD> prompt type exit
UPD> **exit**
6. Answer Y to manual update
Do you want to do a manual update? [y/(n)] **y**
7. Type update_fsl at the console prompt
P00>>> **update_fsl**
update_fsl is equivalent to "update -path fslrom -target fslflash -i"
8. Power off the system
9. Return all jumpers or switches to original position
10. Power up

Example of Method 1 Update

```
P00>>> b dka600
(boot dka500.5.0.1.0 -flags a)
block 0 of dka500.5.0.1.0 is a valid boot block
reading 1082 blocks from dka500.5.0.1.0
bootstrap code read in
base = 2000000, image_start = 0, image_bytes = 87400
initializing HWRPB at 2000
initializing page table at 1ff0000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code
.
```

The default bootfile for this platform is

[ALPHA2100]AS2100_E4_V5_4.EXE

Hit <RETURN> at the prompt to use the default bootfile.

Bootfile: <RETURN>

```
VMS PALcode V5.56-7      , OSF PALcode V1.45-12
  starting console on CPU 0
initialized idle PCB
initializing semaphores
initializing heap
initial heap 1c0c0
memory low limit = 208000
heap = 1c0c0, 13fc0
initializing driver structures
initializing idle process PID
XDELTA not enabled
initializing file system
initializing timer data structures
lowering IPL
CPU 0 speed is 4.29 ns (233MHz)
create dead_eater
create poll
create timer
```

```

create powerup
access NVRAM
entering idle loop
Starting Memory Diagnostics
Memory Diagnostics completed
probing hose 0, PCI
probing PCI-to-EISA bridge, bus 1
bus 0, slot 0 -- ewa -- DECchip 21040-AA
bus 0, slot 1 -- pka -- NCR 53C810
bus 1, slot 7 -- dra -- Mylex DAC960
bus 1, slot 8 -- vga -- Compaq Qvision
bus 0, slot 8 -- ewb -- DECchip 21041-AA
initializing keyboard

```

```

Checking dka500.5.0.1.0 for the option firmware files. . .
Copying DFEAA130 from dka500.5.0.1.0. . .
Copying DFEAB320 from dka500.5.0.1.0. . .
Copying DFXAA320 from dka500.5.0.1.0. . .
Copying KZPSAA12 from dka500.5.0.1.0. . .
Copying CIPCA420 from dka500.5.0.1.0. . .

```

***** Loadable Firmware Update Utility *****

Function	Description
Display	Displays the system's configuration table.
Exit	Done exit LFU (reset).
List	Lists the device, revision, firmware name, and update revision.
Readme	Lists important release information.
Update	Replaces current firmware with loadable data image.
Verify	Compares loadable and hardware images.
? or Help	Scrolls this function table.

UPD> **verify**

```

arcflash      Verifying 4.57-0...  PASSED.
srmflash      Verifying 5.3-2...  PASSED.

```

UPD> **exit**

Do you want to do a manual update? [y/(n)] **y**
AlphaServer 2100 Console V5.3-2, built on May 11 1998 at 21:34:08

P00>>> **update_fsl**

(update -path fslrom -target fslflash)

```

new: 5.3-2
old: 1402905435.2076479324-3788064224
Signatures don't match
New image has a smaller version than existing image
Consistency checks failed, continuing anyway.

```

FEPROM UPDATE UTILITY

-----> CAUTION <-----

EXECUTING THIS PROGRAM WILL CHANGE YOUR CURRENT ROM!

Do you really want to continue [Y/N] ? : **y**

DO NOT ATTEMPT TO INTERRUPT PROGRAM EXECUTION!
DOING SO MAY RESULT IN LOSS OF OPERABLE STATE.

```

The program will take at most several minutes.
Setting to all 0s...
Setting to all 1s...
Programming...
Verifying...
Update successful

```

Method 2

1. Power off the machine
2. Set the jumper or switch to enable failsafe ROM writes.
3. Boot the firmware CD
P00>>> **boot -fl 0,a0 dka600**
4. Select the firmware file you desire
Bootfile: **[alpha2100]as2100_e4_v5_4.exe**
5. At the UPD> prompt type update_fsl
UPD> **update fsl**
update_fsl is equivalent to "update -path fslrom -target fslflash -i"
6. At the UPD> prompt type exit
UPD> **exit**
7. Answer n to manual update
Do you want to do a manual update? [y/(n)] **n**
8. Power off the system
9. Return all jumpers or switches to original position
10. Power up

Example of Method 2 Update

```
P00>>> b dka600
(boot dka500.5.0.1.0 -flags a)
block 0 of dka500.5.0.1.0 is a valid boot block
reading 1082 blocks from dka500.5.0.1.0
bootstrap code read in
base = 2000000, image_start = 0, image_bytes = 87400
initializing HWRPB at 2000
initializing page table at 1ff0000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code
.
.
The default bootfile for this platform is

      [ALPHA2100]AS2100_E4_V5_4.EXE

Hit <RETURN> at the prompt to use the default bootfile.

Bootfile: <RETURN>

VMS PALcode V5.56-7      , OSF PALcode V1.45-12

      starting console on CPU 0
initialized idle PCB
initializing semaphores
initializing heap
initial heap 1c0c0
memory low limit = 208000
heap = 1c0c0, 13fc0
initializing driver structures
initializing idle process PID
XDELTA not enabled
initializing file system
initializing timer data structures
lowering IPL
CPU 0 speed is 4.29 ns (233MHz)
create dead_eater
create poll
```

```

create timer
create powerup
access NVRAM
entering idle loop
Starting Memory Diagnostics
Memory Diagnostics completed
probing hose 0, PCI
probing PCI-to-EISA bridge, bus 1
bus 0, slot 0 -- ewa -- DECchip 21040-AA
bus 0, slot 1 -- pka -- NCR 53C810
bus 1, slot 7 -- dra -- Mylex DAC960
bus 1, slot 8 -- vga -- Compaq Qvision
bus 0, slot 8 -- ewb -- DECchip 21041-AA
initializing keyboard

```

```

Checking dka500.5.0.1.0 for the option firmware files. . .
Copying DFEAA130 from dka500.5.0.1.0. . .
Copying DFEAB320 from dka500.5.0.1.0. . .
Copying DFXAA320 from dka500.5.0.1.0. . .
Copying KZPSAA12 from dka500.5.0.1.0. . .
Copying CIPCA420 from dka500.5.0.1.0. . .

```

***** Loadable Firmware Update Utility *****

Function	Description
Display	Displays the system's configuration table.
Exit	Done exit LFU (reset).
List	Lists the device, revision, firmware name, and update revision.
Readme	Lists important release information.
Update	Replaces current firmware with loadable data image.
Verify	Compares loadable and hardware images.
? or Help	Scrolls this function table.

UPD> **verify**

```

arcflash      Verifying 4.57-0...  PASSED.
srmflash      Verifying 5.3-2...  PASSED.

```

UPD> **update_fsl**

```
(update -path fslrom -target fslflash)
```

new: 5.3-2

old: 5.1-172

FEPROM UPDATE UTILITY

-----> CAUTION <-----

EXECUTING THIS PROGRAM WILL CHANGE YOUR CURRENT ROM!

Do you really want to continue [Y/N] ? : **y**

DO NOT ATTEMPT TO INTERRUPT PROGRAM EXECUTION!
DOING SO MAY RESULT IN LOSS OF OPERABLE STATE.

The program will take at most several minutes.

Setting to all 0s...

Setting to all 1s...

Programming...

Verifying...

Update successful

UPD> **exit**

Do you want to do a manual update? [y/(n)] **n**

Please reset the system.....

Updating Firmware from the Fail-safe Loader

The fail-safe loader on a 2x00 system is activated automatically when the SRM console is corrupt. You will need to follow these steps to update the firmware.

Note

If attempting to update firmware with the fail-safe loader manually enabled via a switch or jumper, just do the **update *srm*** command and exit. I have seen the second update command corrupt the first ROM that was updated. I have also seen the fail-safe loader get corrupted when updating firmware from the manually activated fail-safe loader console. The verify command will show you the failed ROM firmware.

1. If your console prompt is ash> and the ocp says FAIL_IO 00 0004 then the fail-safe loader is active.
2. From the ash> prompt you need to load a specific driver or all device drivers to see the devices at the console.
ash> **init -driver {device}** or
ash> **init -driver 6** - to load all drivers
3. Boot the firmware CD
ash> **boot dka600** - May need -fl 0,a0 in the boot command if before CD V3.7.
4. Select the firmware file you desire
Bootfile: **[alpha2100]as2100_e4_v5_4.exe**
Update the console firmware
UPD> **update *srm*** - See note above.

If SRM and ARC show same version, update SRM only, then reboot the firmware CD from the P00>>> prompt and do a full firmware upgrade.
(Both SRM and ARC)

UPD> **update *arc*** - See note above and Issues and Problems below.
UPD> **verify**
5. UPD> **exit**
6. Answer n to manual update question.
Do you want to do a manual update? [y/(n)] **n**
7. Power off/on the system
8. Reboot the firmware CD
9. At the UPD> prompt do an UPDATE * to update all firmware. Make sure you do both ARC and SRM even if it says you have a later version.
UPD> **update ***
UPD> **verify**
UPD> **exit**

AlphaServer 2x00 FSL Issues and Problems

Unable to update both SRM and ARC from the FSL console

With the fail-safe loader manually enabled with the jumper or switch I have noticed problems with the update corrupting one of the ROMs. I have not seen this with a system that enters the fail-safe loader automatically. The symptom you will see is after booting the CD from the ash> prompt the second ROM that is updated corrupts the 1st. If you do ARC and then SRM, ARC will show the same version as SRM and ARC will be corrupt. If you do SRM and then ARC, both SRM and ARC will reflect ARCs version with the SRM saying failed. If this is happening you must update SRM only, exit to the P00>>>, reboot LFU and then do a full update of ARC and SRM before the system is usable.

2100 FSL_UPDATE Gets NOT = @ address xx xx

When doing the firmware update on an AlphaServer 2100 CPU, the release notes say to do an update_fsl at the UPD> prompt after you have upgraded the SRM and ARC firmware. If jumper J5 is not installed on the standard I/O module (B2110) before updating the fail-safe loader [FSL] you will get the following message repeated on the console and corrupt the FSL. Message will scroll for over 1/2 hour. Init will stop and the system is functional but without a FSL.

```
NOT = @ address XX XX.  - repeating message with an incrementing address
.
.
A total of 1001830 bits did not verify.
Update encountered errors.
```

At this point if you install J6 and power up the system to attempt to load the failsafe loader you get the OCP display
FAIL IO0 04 .

You must do the following to correct it. At this point if you install J6 and power up the system to attempt to load the failsafe loader you get the OCP display
FAIL IO0 04 .

- You must do the following to correct it.
- Install J5.
 - Boot LFU
 - UPD> **exit**
 - Do you want to do a manual update [y/n] **Y**
 - >>> **update_FSL**
 - When finished remove J5 and reboot.

On the 2100A this will not happen. If you attempt to update the FSL without the switch in the correct position it will hang after saying Setting to all 0's... without corrupting the failsafe loader. You just need to power off and reset the switch to the enable position and redo the update.

UPD> **update_FSL**

Do you want to do a manual update [y/n] **Y**

```
FEPROM UPDATE UTILITY
-----> CAUTION <-----
EXECUTING THIS PROGRAM WILL CHANGE YOUR CURRENT ROM!
```

Do you really want to continue [Y/N] ? : **y**

```
DO NOT ATTEMPT TO INTERRUPT PROGRAM EXECUTION!
DOING SO MAY RESULT IN LOSS OF OPERABLE STATE.
The program will take at most several minutes.
Setting to all 0's.....
```


Unable to Set Date and Time under ARC After Replacing Module

After replacing the module that houses the firmware on AlphaServer and possibly AlphaStation systems you are unable to set the Time/Date under ARC. It is set to 0/0/2000. If you attempt to enter the correct date it returns **"illegal date/time entered"**.

There appears to be a problem with ARC version 4.56 and 4.57 when the TOY clock has been set to zeroes. It appears that this is the case with new modules coming from manufacturing or repair.

There are two possible workarounds.

For all systems:

- a. Load and update the console firmware off the V5.0 CD
- b. Set the time under ARC.
- c. Reload the latest firmware off the V5.2 CD

For the 2x00 Series:

- a. >>> **d -b -n c toy:0 ff**
- b. >>> **init**
- c. press cold reboot button
- d. >>> **init**

This command sequence will write binary ones across the TOY clock. The result will be that the date in ARC is set to 1/1/2000, and then the correct date and time can be entered. Do not do this procedure on the AlphaServer 1000/1000A . You may render the system unusable.

AlphaServer 1200/4100 Issues

1. When upgrading to V5.3 or later for the first time you must follow a two step process to upgrade the firmware. Starting with the V5.3 console the AlphaBIOS image was relocated into a different area of flash ROM. In order for the new firmware to work you must update firmware as follows.

- Boot CD
- Update SRMflash
- Exit
- Boot CD a second time
- Update AlphaBios
- Exit

Failure to upgrade in this order will cause the system to hang or crash on init when going into AlphaBIOS.

If you downgrade from V5.3 or later you must also do it in a 2 step process. Once you have upgraded to a minimum 5.3 using the 2 step process, you can update both SRM and AlphaBIOS to later versions at the same time without booting twice.

2. In order to upgrade to V5.4 your system must be at a minimum 5.2 SRM console version. If you are at an earlier version it will hang during the SRMflash update.
3. Always reset the system after an operating system shutdown before attempting a firmware upgrade
4. Starting with Version 5.4 you will need 3 floppy disks to perform system and IO firmware updates. The SRM and AlphaBIOS firmware will no longer fit on one floppy.

Certain AlphaServers With V5.7-4 Gets Console DAC960 Sizing Errors

AlphaServer 4100/1200 , DigitalServer 7000/5000 and Digital Ultimate Workstation's updated to V5.7-4 SRM console code have problems with the SWXCR controllers during initialize. You will see the following error.

Configuring IO

...

Dev_table_add: device Mylex Dac960 or bus PCI not found

Dev_table_add: device Mylex Dac1100 or bus PCI not found

Dev_table_add: device Mylex Dac1200 or bus PCI not found

dac0, hose0 , bus0, slot4

Dev_table_remove: device Mylex Dac960 or bus PCI not found

Dev_table_remove: device Mylex Dac1100 or bus PCI not found

Dev_table_remove: device Mylex Dac1200 or bus PCI not found

The overlay file for DAC960 was not updated with some newer device name information. Blitz 2781 was issued for this problem. Firmware version V5.7-5 corrects the problem.

Updating Console Firmware on a System Configured as a Galaxy

Firmware on systems configured as a Galaxy node can not be updated until the system is first powered up in non-Galaxy mode (monolithic mode). You can not safely run utilities like ECU, RCU, EEROMCFG, etc. when in Galaxy mode either. The following steps are required to update the firmware successfully or run console based utilities. See page 267 for information on each variable. They are set differently depending on the system type.

1. Obtain the current Galaxy console environmental variable settings.

```
>>> show * or show lp*
```

Write down the following values. Depending on your configuration and system type, some variables may not be used.

- **lp_count** Number of Galaxy instances
- **lp_cpu_mask0** CPU mask for partition 0
- **lp_cpu_mask1** CPU mask for partition 1
- **lp_cpu_mask2** CPU mask for partition 2
- **lp_io_mask0** IO mask for partition 0
- **lp_io_mask1** IO mask for partition 1
- **lp_io_mask2** IO mask for partition 2
- **lp_mem_size0** Memory size for partition 0
- **lp_mem_size1** Memory size for partition 1
- **lp_mem_size2** Memory size for partition 2
- **lp_mem_mode** Tells UNIX to load into each memory partition
- **lp_shared_mem_size** Amount of shared memory

2. Set the system into non-Galaxy mode.

```
>>> set lp_count 0
```

```
>>> init
```

3. You can now run console based utilities or boot the Alpha Systems Firmware Update CD version V5.4 or later.

4. Update the console firmware and verify the update.

5. On AlphaServer 8200, 8400, GS60, GS60E and GS140 execute the **build -e** command as required during any firmware update and then **init**.

```
>>> build -e
```

```
>>> init
```

6. Reset the Galaxy console variable to the values they were set to prior to the update. This example is for a GS140. The **lp_cpu_mask*** and **lp_io_mask*** values will be different on AlphaServer ES40 and 4100's than shown in this example

The following example is for a GS140 system with 6 CPUs, 3 4gb memories and 3 IO modules. These commands may not be required on the AlphaServer ES40 and 4100 because a **build -e** command is not required.

```
P00>>> create -nv lp_count 3
P00>>> create -nv lp_cpu_mask0 3 (CPU0 and 1 - node 0)
P00>>> create -nv lp_cpu_mask1 c (CPU2 and 3 - node 1)
P00>>> create -nv lp_cpu_mask2 30 (CPU4 and 5 - node 2)
P00>>> create -nv lp_io_mask0 100 (IO slot 8)
P00>>> create -nv lp_io_mask1 80 (IO slot 7)
P00>>> create -nv lp_io_mask2 40 (IO slot 6)
P00>>> create -nv lp_mem_size0 100000000 (4GB memory)
P00>>> create -nv lp_mem_size1 100000000 (4GB memory)
P00>>> create -nv lp_mem_size2 80000000 (2GB memory)
P00>>> create -nv lp_shared_mem 80000000 (2GB shared memory)
P00>>> init
Do you REALLY want to reset all partitions? (Y/N)Y
```


AlphaServer 8X00 IMPORTANT CAUTIONS BEFORE UPDATING FIRMWARE !!!

Operation With Mixed Firmware Revisions is NOT Supported

In a multiprocessor system, do NOT attempt to initialize or operate the system, with mixed-revisions of console firmware installed on the CPUs. Always insure that the CPUs all have the same revision of Console Firmware, before initializing or powering-up the system. Otherwise, the system may hang, or some CPUs may not operate. When replacing or adding CPUs to your system, you must insure that all CPUs (the old ones and the new ones) have the same revision of console firmware installed. The following three cases are noted :

1. When adding a CPU with HIGHER rev console firmware to a system having LOWER rev firmware, first update the existing CPU firmware to the higher rev. Following that, power-down the system and add the new CPU. Then, power-up the system and proceed to boot, etc.
2. When adding a CPU with the SAME rev firmware as the other CPUs, simply power-down the system and add the new CPU. Then, power-up the system and proceed to boot, etc. In this case, no firmware update is necessary.
3. If it became necessary to add a CPU with LOWER rev firmware to a system having HIGHER rev firmware (such as replacing a CPU with an older spare), you must first update the firmware on the new CPU to match the firmware rev of the existing CPUs. To do this, first power-down and REMOVE the existing CPUs, and install only the new CPU. Then, power-up and perform a console firmware update on the new CPU. Then, power-down and re-install the existing CPUs. Finally, power-up again, and proceed to boot, etc.

Do NOT Attempt to Down-Rev the Firmware on the CPUs Listed

Do NOT attempt to update console firmware to a lower revision than shown in Table 1-3. Installing a revision of firmware below the minimum required will render the CPU module INOPERABLE (in some cases, the Loadable Firmware Update utility will not allow the update, if it were attempted, and would give an error message).

Minimum Required Console Revision for CPU Operation	
CPU	Minimum Console Revision
E2056-CA (Single CPU, 300 MHZ Rev. H and above)	V2.2-102
E2056-DA (Dual CPU, 300 MHZ Rev. P and above)	V2.2-102
E2061-CA (Single CPU, 350 MHZ Rev. A and above)	V3.0-9
E2061-DA (Dual CPU, 350 MHZ Rev. A and above)	V3.0-9
E2062-DA (Dual CPU, 440 MHZ All Rev.'s)	V4.0-4
E2065-DA (Dual CPU, 625 MHZ All Rev.'s)	T5.1-18

AlphaServer 8X00 Single CPU Modules Fail With Console Firmware V6.0

There is a problem with single CPU Turbolaser modules (300/350 MHZ) and firmware version V6.0. If a single CPU card is upgraded to V6.0 the CPU will either hang during selftest or the selftest LED will not come on. The CPU will not show up at the console either. There is a workaround available on EV5/EV56 Turbolaser systems (not available for EV6 or EV67). If a CPU is hanging during selftest, placing the key/switch in the secure position during power up will disable diagnostics from running and allow system to come to the >>>. The CPU will show up at the >>> and the selftest lite will be on. This will allow you to boot the firmware and reload non V6.0 firmware.

A few things we discovered in testing.

1. On the 8200, the light on the secure switch does not immediately illuminate when pressed in during power on. It comes on after about a minute.
2. If a single CPU module with V6.0 firmware is in the backplane by itself, placing the key/switch in secure during power up will allow the system to come to the >>>. The CPU will show up at the >>> and the selftest lite will be on.
3. If a working CPU is in slot 0 and the bad CPU is in another slot, the system will come to the >>> with all CPUs showing passed and the selftest light on.
4. If the bad CPU is in slot 0 and a good CPU is in another slot, the console will start on the good CPU and the bad CPU selftest light will not come on. Also the suspect CPU will not show up at the >>> with a show config command.
5. Once at the prompt update the firmware using either V5.9 or V6.1 firmware. The problem is corrected with the V6.1 firmware that is currently available on the firmware website in the interim directory at <http://ftp.digital.com/pub/Digital/Alpha/firmware/interim/as8x00/>

The slot numbers listed are for the 8400 platform. For the 8200 replace slot 0 above with slot 4.

Compaq AlphaServer GS60/GS60E/GS140 IMPORTANT CAUTIONS BEFORE UPDATING FIRMWARE !!!

Operation With Mixed Firmware Revisions is NOT Supported

In a multiprocessor system, do NOT attempt to initialize or operate the system, with mixed-revisions of console firmware installed on the CPUs. Always insure that the CPUs all have the same revision of Console Firmware, before initializing or powering-up the system. Otherwise, the system may hang, or some CPUs may not operate. When replacing or adding CPUs to your system, you must insure that all CPUs (the old ones and the new ones) have the same revision of console firmware installed. The following three cases are noted :

1. When adding a CPU with HIGHER rev console firmware to a system having LOWER rev firmware, first update the existing CPU firmware to the higher rev. Following that, power-down the system and add the new CPU. Then, power-up the system and proceed to boot, etc.
2. When adding a CPU with the SAME rev firmware as the other CPUs, simply power-down the system and add the new CPU. Then, power-up the system and proceed to boot, etc. In this case, no firmware update is necessary.
3. If it became necessary to add a CPU with LOWER rev firmware to a system having HIGHER rev firmware (such as replacing a CPU with an older spare), you must first update the firmware on the new CPU to match the firmware rev of the existing CPUs. To do this, first power-down and REMOVE the existing CPUs, and install only the new CPU. Then, power-up and perform a console firmware update on the new CPU. Then, power-down and re-install the existing CPUs. Finally, power-up again, and proceed to boot, etc.

Required MINIMUM Console Firmware Revision

Do NOT attempt to update console firmware to a lower revision than shown below. Installing a revision of firmware below the minimum required will render the CPU module INOPERABLE (in some cases, the Loadable Firmware Update utility will not allow the update, if it were attempted, and would display an error message).

Minimum Required Console Revision for CPU Operation	
CPU	Minimum Console Revision
E2063-DA (Dual CPU, 525 MHZ All Revs)	V5.3-12
E2067-DA (Dual CPU, 700 MHZ All Revs)	V5.5-25

AlphaServer GS60/GS140 Fails to Boot Firmware CD V5.4

Following the standard procedure to boot the Alpha Systems Firmware Update CD V5.4 on AlphaServer GS60 and GS140 systems may intermittently fail.

PROBLEM SYMPTOM:

After booting the CD and after the program reports

"Starting new console, Please wait a minute..."

an error message like the following example may sometimes be reported:

```
*** Console Error, CPU 4, Restarting ***
halt code = 2, PC = 1a730
```

SOLUTION:

If this occurs on your system, you can use the CD to perform the firmware update, by using the following workaround procedure:

- 1) Re-initialize the system via the "init" console command.
- 2) Enter the "lfu" command at the console prompt, and respond to the prompts as shown in the following example :

```
P00>>>lfu
```

```
***** Loadable Firmware Update Utility *****
```

```
Select firmware load device (cda0, dva0, ewa0), or
Press  to bypass loading and proceed to LFU: cda0
```

```
Please enter the name of the firmware files list, or
Press  to use the default filename [GS140FW]:
```

```
Copying GS140FW from DKB400.4.0.6.1 .
Copying [gs140]T6README from DKB400.4.0.6.1 .
Copying [gs140]T6SRMROM from DKB400.4.0.6.1 ..
```

```
.
```

```
.
```

```
.
```

```
UPD>
```

- 3) From this point on, you can run the update program in the normal manner.

ADDITIONAL COMMENTS:

The problem will be corrected in the next release.

DS10 With 600MHZ CPU Has No Default Bootfile Selected with V5.9 CD

When an attempt is made to upgrade a DS10 system with the 6/600 MHZ CPU using the V5.9 Alpha Systems Firmware Update CD, no default bootfile will be selected. The user will need to enter the directory and filename in order to load firmware off the CD.

The firmware CD uses a file called smttable.txt that defines what default bootfile that is used for each platform. The DS10 6/600 CPU was not added to the file on the V5.9 CD. If you attempt to update by hitting <CR> at the filename prompt you will get a "file not found" error followed by a secondary bootstrap failure.

You need to enter [DS10]DS10_V5_9.EXE as the filename if you are using the V5.9 CD. This will be corrected in the next CD release.

DS10/DS20 Invalid Image When Updating From Floppy

In order to update firmware from floppy on the DS10 and DS20 platforms you need to copy platform specific firmware.sys files to a system and save them to a floppy.

When attempting to update the firmware the SRM and/o AlphaBIOS images may indicate Invalid Image from LFU when executing a list command.

This normally happens when Netscape is used to download the files.

The workarounds are to either use Internet Explorer to download the files or go to <ftp://ftp.digital.com/pub/Digital/Alpha/firmware/> to obtain the specific firmware files. You will need to navigate through the directories to find the appropriate files.

See the DS10 section for instructions on creating a LFU firmware floppy.

Upgrading ES40, ES40LP or ES40CV to 667MHz or 833MHz CPUs

Upgrading ES40 systems to faster processors requires loading the correct console firmware to support the faster CPUs. The 833 MHz CPUs require SRM V5.9-24 and SROM V2.12F in order to properly function. The EV67 CPUs also require a different PALcode than the EV6 CPUs. The firmware must be updated before the CPUs are replaced. All CPUs must also be the same speed. You can not MIX different speed CPUs in the same box.

There are two different motherboards available on the ES40. The faster CPUs require specific revision motherboards for proper operation.

- If the motherboard is a 54-25385-02 revision A01 or higher, no replacement is required.
- If the motherboard is a 54-25385-01, the revision of the System Motherboard needs to be verified. The upgrade requires a minimum Rev E0* system motherboard (54-25385-01). The Revision Sticker is on the System Motherboard between the CPU0 and CPU1 slots. If the revision is D0* or lower, the System Motherboard **MUST** be replaced before performing the upgrade. If a replacement is needed, perform FCO # 00-ES40-F002 EQ-01772-01.

There are three models of the ES40. They are the ES40, ES40LP and ES40CV. Specific procedures for each model is listed below. The differences are with the RMC versions.

ES40

1. Leave the system's current CPU's installed
2. Boot the Alpha Systems Firmware Update V5.9 CD and select the default es40 firmware file "ES40_V5_9.exe"

```
P00>>> boot dqa0
bootfile: <CR>
```

3. At the UPD> prompt select exit to enter manual mode.

```
UPD> exit
Do you want to go to Manual Mode? [y/n]: Y
```

4. At the UPD> prompt enter the update command for all the system firmware. This includes ABIOS, SRM, SROM, TIG and RMC. SRM V5.9-24 and SROM V2.12F are required for the 833 MHz CPU support. The RMC firmware V2.5 is the normal ES40 RMC firmware version.

```
UPD> update abios
Abios Updating to 5.70... Verifying 5.70... PASSED.
UPD> update srm
SRM Updating to V5.9-24... Verifying V5.9-24... PASSED.
UPD> update srom
srom Updating to V2.2-F... Verifying V2.12-F... PASSED.
UPD> update rmc
rmc Updating to V2.5... Verifying V2.5... PASSED.
UPD> update tig
tig Updating to 10... Verifying 10... PASSED.
```

5. When the update is complete type verify and if they all pass exit.

```
UPD> verify
UPD> exit
```

6. Remove original CPUs and install the new 667MHz or 833MHz CPUs. This will allow console control because the correct SRM and SROM code is loaded. The correct PALcode must now be loaded. There are 2 versions of PALcode.
 - PALcode for EV6 500MHz cpu's is in the format of Vx.yy-z
 - PALcode for EV67 667MHz or EV68 833MHz cpu's is in the format of Vx.yy-zzz
7. Boot the Alpha Systems Firmware Update V5.9 CD and select the default es40 firmware file file "ES40_V5_9.exe" and update the SRM firmware one more time with the new cpu modules installed to ensure that the correct version of PALcode optimized for the particular CPU Type is loaded.


```

P00>>> boot dqa0
bootfile: <CR>

UPD> update SRM
UPD> exit
      
```
8. Verify the correct PALcode version is loaded


```

P00>>> show pal
      
```
9. Clear the central error repository and display status of the new CPUs.


```

P00>>> clear_error all
P00>>> show config
      
```
10. The ES40 should now have functioning 667MHz or 833MHz cpu's

ES40LP

1. Leave the system's current CPU's installed
2. Boot the Alpha Systems Firmware Update V5.9 CD and select the default es40 firmware file "ES40_V5_9.exe"


```

P00>>> boot dqa0
bootfile: <CR>
      
```
3. At the UPD> prompt select exit to enter manual mode.


```

UPD> exit
Do you want to go to Manual Mode? [y/n]: Y
      
```
4. At the UPD> prompt enter the update command for all the system firmware. This includes ABIOS, SRM, SROM and TIG. The SRM V5.9-24 and SROM V2.12F is required for the 833 MHZ CPU support. The RMC firmware I2.5 is the ES40LP version.

Caution:

DO NOT upgrade the RMC using the RMC firmware loaded by default.
 The ES40LP uses the RMC version I2.5 which is loaded from a
 seperate firmware file.

```

UPD> update abios
Abios Updating to 5.70... Verifying 5.70... PASSED.
UPD> update srm
SRM Updating to V5.9-24... Verifying V5.9-24... PASSED.
UPD> update srom
srom Updating to V2.2-F... Verifying V2.12-F... PASSED.
UPD> update tig
tig Updating to 10... Verifying 10... PASSED.
      
```

5. When the update is complete type verify and if they all pass exit. Beware the RMC firmware mail say failed. This is because the ES40LP uses a different version than what is loaded from the default ES40 firmware file.

```
UPD> verify  
UPD> exit
```

6. Remove original CPUs and install the new 667MHz or 833MHz CPUs. This will allow console control because the correct SRM and SROM code is loaded. The correct PALcode and RMC firmware must now be loaded. There are 2 versions of PALcode.
 - PALcode for EV6 500MHz cpu's is in the format of Vx.yy-z
 - PALcode for EV67 667MHz or EV68 833MHz cpu's is in the format of Vx.yy-zzz
7. Boot the Alpha Systems Firmware Update V5.9 CD and select the es40lp RMC firmware file es40lp_i25.exe. Enter manual mode and then update the RMC firmware

```
P00>>> boot dqa0  
bootfile: [es40]es40lp_i25.exe
```

```
UPD> exit  
Do you want to go to Manual Mode? [y/n]: Y
```

```
UPD> update rmc  
rmc Updating to i2.5... Verifying i2.5... PASSED.
```

```
UPD> exit
```

8. Boot the Alpha Systems Firmware Update V5.9 CD and select the default es40 firmware file file "ES40_V5_9.exe" and update the SRM firmware one more time with the new cpu modules installed to ensure that the correct version of PALcode optimized for the particular CPU type is loaded.

```
P00>>> boot dqa0  
bootfile: <CR>
```

```
UPD> update SRM  
UPD> exit
```

9. Verify the correct PALcode version is loaded
P00>>> **show pal**
10. Clear the central error repository and display status of the new CPUs.
P00>>> **clear_error all**
P00>>> **show config**

11. The ES40 should now have functioning 667MHz or 833MHz cpu's

ES40CV

1. Leave the system's current CPU's installed
2. Boot the Alpha Systems Firmware Update V5.9 CD and select the default es40 firmware file "ES40_V5_9.exe"

```
P00>>> boot dqa0  
bootfile: <CR>
```

3. At the UPD> prompt select exit to enter manual mode.

```
UPD> exit  
Do you want to go to Manual Mode? [y/n]: Y
```

4. At the UPD> prompt enter the update command for all the system firmware except the RMC. This includes ABIOS, SRM, SROM and TIG. The SRM V5.9-24 and SROM V2.12F is required for the 833 MHZ CPU support. The RMC firmware F2.5 is the ES40CV version.

Caution:

DO NOT upgrade the RMC using the RMC firmware loaded by default.
The ES40CV uses the RMC version F2.5 which is loaded from a
separate firmware file.

```
UPD> update abios
Abios Updating to 5.70... Verifying 5.70... PASSED.
UPD> update srm
SRM Updating to V5.9-24... Verifying V5.9-24... PASSED.
UPD> update srom
srom Updating to V2.2-F... Verifying V2.12-F... PASSED.
UPD> update tig
tig Updating to 10... Verifying 10... PASSED.
```

5. When the update is complete type verify and if they all pass exit. Beware the RMC firmware may fail. This is because the ES40CV uses a different version than what is loaded from the default ES40 firmware file.

```
UPD> verify
UPD> exit
```

6. Remove original CPUs and install the new 667MHz or 833MHz CPUs. This will allow console control because the correct SRM and SROM code is loaded. The correct PALcode and RMC firmware must now be loaded. There are 2 versions of PALcode.

- PALcode for EV6 500MHz cpu's is in the format of Vx.yy-z
- PALcode for EV67 667MHz or EV68 833MHz cpu's is in the format of Vx.yy-zzz

7. Boot the Alpha Systems Firmware Update V5.9 CD and select the es40lp RMC firmware file es40lp_f25.exe. Enter manual mode and then update the RMC firmware

```
P00>>> boot dqa0
bootfile: [es40]es40lp_f25.exe

UPD> exit
Do you want to go to Manual Mode? [y/n]: Y

UPD> update rmc
rmc Updating to f2.5... Verifying f2.5... PASSED.

UPD> exit
```

8. Boot the Alpha Systems Firmware Update V5.9 CD and select the default es40 firmware file file "ES40_V5_9.exe" and update the SRM firmware one more time with the new cpu modules installed to ensure that the correct version of PALcode optimized for the particular CPU type is loaded.

```
P00>>> boot dqa0
bootfile:<CR>

UPD> update SRM
UPD> exit
```

9. Verify the correct PALcode version is loaded
- ```
P00>>> show pal
```



10. Clear the central error repository and display status of the new CPUs.  
P00>>> **clear\_error all**  
P00>>> **show config**
11. The ES40 should now have functioning 667MHz or 833MHz cpu's



## ES40LP/ES40CV RMC Firmware is Different Than on the V5.6 Firmware CD

### Overview

There are three different models of the ES40. They are the Corporate Clipper (ES40), the Flying Clipper (ES40CV), and the Ironsides (ES40LP). Each uses a different version of the RMC firmware. The V5.6 Alpha Systems Firmware CD only has RMC firmware for the Corporate Clipper. If you load the wrong RMC firmware into a system it will indicate fan failures. The Ironsides - ES40LP will complain about fan 6. The Flying Clipper - ES40 CV would complain about fans 1 and 2. The ES40CV and the ES40LP RMC will fail VERIFY from the UPD> prompt when booted off the Alpha Systems Firmware CD. If you execute a list you will see the current version. They are as follows. Note that the versions are subject to change.

| System type | RMC Version |
|-------------|-------------|
| ES40        | V2.2        |
| ES40LP      | I2.2        |
| ES40CV      | F2.2        |

### ES40 Systems Differences

#### **Corporate Clipper - ES40**

This is the Standard Clipper. It has six fans, 1 thru 6, and it uses the regular RMC firmware image version V2.2. This version is part of the Alpha Systems Firmware CD.

#### **Flying Clipper - ES40CV**

The Flying Clipper is based on the Clipper box, but has been modified to shorten the chassis. This box only has four fans. It has fans 5 and 6 for the CPUs and fans 3 and 4 for the PCI. There are NO fans 1 and 2. There are two power supplies that are fully redundant. This model uses the RMC firmware image version F2.2. This version is NOT available on the V5.6 Alpha Systems Firmware CD.

#### **Ironsides - ES40LP**

Ironsides is a low profile rack mount system. It has four CPU fans (1 thru 4) and a critical PCI fan (5). It does not have a fan 6. There is one external power supply plugged into the rear. This box also has 7 PCI slots and embedded SCSI and Ethernet controllers. This model uses the RMC firmware image version I2.2. This version is NOT available on the V5.6 Alpha Systems Firmware CD.

### How to Build a Bootable Floppy

- a. Locate the RMC firmware you need in the .zip file on Cybrary or obtain the file from Engineering. Save that file to your hard disk. If using mkboot you must rename the file to eight characters or less not counting the .exe extension. The .zip contains RMC firmware for the ES40CV and ES40LP

**es40cv\_f22.exe** is for the Flying Clipper - ES40CV

**iron\_i22.exe** is for the Ironsides - ES40LP

Alpha Systems Firmware Update CD V5.6 for the Corporate Clipper - ES40

- b. Locate the mkboot.exe or makeboot.exe on Cybrary  
mkboot.exe - Image to make a bootable floppy on a PC or Alpha running NT  
makeboot.exe - Image to make a bootable floppy on an Alpha running NT
- c. Fat format a floppy diskette
- d. From an MSDOS window execute one of the following commands to make a bootable floppy.

**mkboot iron\_i22.exe** or  
**makeboot -f es40cv\_f22.exe**

## Tru64 UNIX

This method requires one floppy. One with the LFU utility and the other with the system firmware.

- a. Download [mkbootfirm.tar](#) from Cybrary to your UNIX system.
- b. Extract the RMC firmware from the Cybrary. There are two files located in the Download directory. Copy it to the same directory as mkbootfirm.tar. Three methods to get the firmware are
  - You can copy the [es40\\_rmc\\_fw.zip](#) file to an NT system and unzip it there. Then copy the files from you PC to the UNIX box.
  - You can copy the [es40\\_rmc\\_fw.zip](#) file to your UNIX box. Then download the [zip\\_tar.gz](#) file from Cybrary. This is the UNIX zip/unzip utility. You can use it to unzip the winzip firmware file.
- c. Change directory to where files were downloaded.  
# **cd [to directory with files]**
- d. Untar the mkbootfirm.tar file on your target Digital UNIX system with the command  
# **tar xvf mkbootfirm.tar**
- e. You may need to set mkbootfirm.exe file permissions to have execute permissions.  
# **chmod 755 mkbootfirm or chmod +x mkbootfirm**
- f. Format the floppy.  
# **fddisk -fmt /dev/rfd0a**      or  
  
With Tru64 UNIX V5.0 you can do one of the following  
# **fddisk -fmt /dev/rdisk/floppy0a**      or  
  
# **cd /dev**  
# **./MAKEDEV fd0**  
# **fddisk -fmt /dev/rfd0a**
- g. From directory where files are located execute the following command. This is an example using the Ironside RMC image.  
# **./mkbootfirm iron\_i22.exe |dd of=/dev/rfd0c bs=64k**

## How to Update RMC Firmware

### Floppy

- a. Insert the floppy in the system and boot it  
>>> **Boot dva0**
- b. At the UPD> prompt type exit and then answer "Y" to the question about manual update.  
UPD> **exit**  
Do you want to do a manual update? [y/(n)]**Y**
- c. This will bring you back to the UPD> prompt. Now list, update and verify the RMC firmware update.  
UPD> **list**  
UPD> **update rmc**  
UPD> **verify**
- d. exit and reset the machine.  
UPD> **exit**

## Network and OpenVMS

- a. Copy the RMC firmware.sys file to MOM\$LOAD of an existing node in the cluster  
\$ **Copy es40cv\_f22.sys mom\$load** for the Flying Clipper or  
\$ **Copy iron\_i22.sys mom\$load** for the Ironsides
- b. Set the VMS attributes on the file with the following command.  
\$ **Set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) es40cv\_f22.sys** or  
\$ **Set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) iron\_i22.sys**
- c. Enable service on that node from NCP  
\$ **MC NCP**  
MC NCP> **Show Known Circuit Characteristic**  
Known Circuit Volatile Characteristics as of 12-FEB-1997 19:27:41  
Circuit = BNA-0 - Circuit name will change from system to system  
State = on  
Service = disabled - if enabled skip to boot command  
Counter timer = 65534  
Designated router = 28.1023 (CXO28A)  
Cost = 4  
Maximum routers allowed = 33  
Router priority = 64  
Hello timer = 15  
Type = Ethernet  
Adjacent node = 28.1023 (CXO28A)  
Listen timer = 30  
  
NCP> **Set Circ BNA-0 State OFF**  
NCP> **Set Circ BNA-0 Service Enable**  
NCP> **Set Circ BNA-0 State ON**
- d. Boot from the >>> using the following command  
>>> **b ewa0 -file es40cv\_f22** for the Flying Clipper  
>>> **b ewa0 -file iron\_i22** for the Ironsides
- e. At the UPD> prompt type exit and then answer "Y" to the question about manual update.  
UPD> **exit**  
Do you want to do a manual update? [y/(n)]**Y**
- f. This will bring you back to the UPD> prompt. Now list, update and verify the RMC firmware update.  
UPD> **list**  
UPD> **update rmc**  
UPD> **verify**  
  
If you booted off the firmware CD you can load the RMC firmware over the network at the UPD> prompt if the file is in MOM\$LOAD with the command  
UPD> **update rmc -p mopdl:es40cv\_f22/ewa0** for the Flying Clipper or  
UPD> **update rmc -p mopdl:iron\_i22/ewa0** for the Ironsides
- g. Exit and reset the machine.  
UPD> **exit**

## Example

P00>>> **sho config**

Compaq Computer Corporation  
Compaq AlphaServer ES40

### Firmware

SRM Console: T5.6-68  
ARC Console: v5.70  
PALcode: OpenVMS PALcode V1.69-2, Tru64 UNIX PALcode V1.62-1  
Serial Rom: V2.8-F  
RMC Rom: V1.0  
RMC Flash Rom: I2.3

```
Processors
CPU 0 Alpha EV6 pass 2.3 500 MHz 4MB Bcache
CPU 1 Alpha EV6 pass 2.3 500 MHz 4MB Bcache
CPU 2 Alpha EV6 pass 2.3 500 MHz 4MB Bcache
CPU 3 Alpha EV6 pass 2.3 500 MHz 4MB Bcache
```

```
Core Logic
Cchip DECchip 21272-CA Rev 9 (C4)
Dchip DECchip 21272-DA Rev 2
Pchip 0 DECchip 21272-EA Rev 2
Pchip 1 DECchip 21272-EA Rev 2
TIG Rev 10
```

```
Memory
 Array Size Base Address Intlv Mode

 0 512Mb 0000000000000000 4-Way
 1 512Mb 0000000002000000 4-Way
 2 512Mb 0000000004000000 4-Way
 3 512Mb 0000000006000000 4-Way
```

2048 MB of System Memory

```
Slot Option Hose 0, Bus 0, PCI Bridge to Bus 1, ISA
 7 Acer Labs M1543C
 15 Acer Labs M1543C IDE dqa.0.0.15.0
 dqb.0.1.15.0
 dqa0.0.0.15.0 CD-224E
 19 Acer Labs M1543C USB

 Option Hose 0, Bus 1, ISA
 Floppy dva0.0.0.1000.0

Slot Option Hose 1, Bus 0, PCI SCSI Bus ID 7
 4 NCR 53C895 pka0.7.0.4.1 08-00-2B-86-1A-72
 5 DE500-BA Network Con ewa0.0.0.5.1
```

```
P00>>> boot dva0
(block dva0.0.0.1000.0 -flags A)
block 0 of dva0.0.0.1000.0 is a valid boot block
reading 1306 blocks from dva0.0.0.1000.0
bootstrap code read in
base = 200000, image_start = 0, image_bytes = a3400
initializing HWRPB at 2000
initializing page table at 3ffb4000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code
```

OpenVMS PALcode V1.75-2, Tru64 UNIX PALcode V1.68-2

```
Istream prefetching is being turned off (i_ctl.sbe = 0) on all CPUs
starting console on CPU 0
initialized idle PCB
initializing semaphores
initializing heap
initial heap 240c0
memory low limit = 5c0000
heap = 240c0, 17fc0
initializing driver structures
initializing idle process PID
initializing file system
initializing hardware
initializing timer data structures
lowering IPL
CPU 0 speed is 500 MHz
create dead_eater
create poll
```

```

create timer
create powerup
access NVRAM
Memory size 2048 MB
testing memory
...
probe I/O subsystem
probing hose 1, PCI
bus 0, slot 4 -- pka -- NCR 53C895
bus 0, slot 5 -- ewa -- DE500-BA Network Controller
probing hose 0, PCI
probing PCI-to-ISA bridge, bus 1
bus 0, slot 15 -- dqa -- Acer Labs M1543C IDE
bus 0, slot 15 -- dqb -- Acer Labs M1543C IDE
starting drivers
entering idle loop
Istream prefetching is being turned off (i_ctl.sbe = 0) on all CPUs
starting console on CPU 1
initialized idle PCB
initializing idle process PID
lowering IPL
CPU 1 speed is 500 MHz
create powerup
Istream prefetching is being turned off (i_ctl.sbe = 0) on all CPUs
starting console on CPU 2
initialized idle PCB
initializing idle process PID
lowering IPL
CPU 2 speed is 500 MHz
create powerup
Istream prefetching is being turned off (i_ctl.sbe = 0) on all CPUs
starting console on CPU 3
initialized idle PCB
initializing idle process PID
lowering IPL
CPU 3 speed is 500 MHz
create powerup
initializing pka ewa dqa dqb
Checking dqa0.0.0.15.0 for the option firmware files. . .
dqa0.0.0.15.0 has no media present or is disabled via the RUN/STOP switch
Checking dva0.0.0.1000.0 for the option firmware files. . .
If you have a floppy containing option firmware,
Please insert it now and hit <return> when ready.
Option firmware not copied.

```

\*\*\*\*\* Loadable Firmware Update Utility \*\*\*\*\*

| Function  | Description                                                     |
|-----------|-----------------------------------------------------------------|
| Display   | Displays the system's configuration table.                      |
| Exit      | Done exit LFU (reset).                                          |
| List      | Lists the device, revision, firmware name, and update revision. |
| Readme    | Lists important release information.                            |
| Update    | Replaces current firmware with loadable data image.             |
| Verify    | Compares loadable and hardware images.                          |
| ? or Help | Scrolls this function table.                                    |

UPD> **exit**

Do you want to do a manual update? [y/(n)] **y**

\*\*\*\*\* Loadable Firmware Update Utility \*\*\*\*\*

| Function | Description |
|----------|-------------|
|----------|-------------|

```

Display Displays the system's configuration table.
Exit Done exit LFU (reset).
List Lists the device, revision, firmware name, and update revision.
Readme Lists important release information.
Update Replaces current firmware with loadable data image.
Verify Compares loadable and hardware images.
? or Help Scrolls this function table.

```

UPD> **list**

| Device | Current Revision | Filename | Update Revision |
|--------|------------------|----------|-----------------|
| Abios  | v5.70            | abios_fw | Missing file    |
| SRM    | t5.6-68          | srm_fw   | Missing file    |
| rmc    | I2.2             | rmc_fw   | I2.3            |
| srom   | V2.8-F           | srom_fw  | V2.8-F          |
| tig    | 10               | tig_fw   | 10              |

UPD>

UPD> **update rmc**

Confirm update on:

rmc

[Y/(N)]y

WARNING: updates may take several minutes to complete for each device.

DO NOT ABORT!

rmc                    Updating to I2.3...    Verifying I2.3...    PASSED.

UPD> **exit**

Initializing....

SROM V2.0 CPU # 00 @ 0500 MHz

SROM program starting

Reloading SROM



## **AlphaServer ES40's Configured for Galaxy Should Not Use V6.0 Firmware**

AlphaServer ES40 systems that are configured for Galaxy, (soft partitions) must not be upgraded using the V6.0 console firmware.

If this firmware is loaded partiton 1 will display an access violation.

Until new firmware is released use the V5.9 console firmware on the ES40 when configured for Galaxy partitioning.

See Blitz TD 2943-CR for details.



## **ES40 & GS80/GS160/GS320 Systems May Not Boot Unix V4.0G**

When running the `wwidmgr` or a non-powerup system test, the SRM on ES40 and GS80/160/320 systems may expand the console heap beyond what the operating system needs to boot. Once the heap expands, the new value continues to be used until it is changed.

Due to a boundary condition in V4.0G, failure to reset the `heap_expand` environment variable after running the system test or `wwidmgr` can prevent the system from booting. The error message in this situation is similar to the following:

```
Bootstrap address collision, image loading aborted
panic (cpu0): HWRPB overran system space
```

To avoid boot problems after running the `wwidmgr` or a non-powerup system test, V4.0G users on ES40 and GS80/160/320 systems should do the following:

- Check the value of the `heap_expand` environment variable:

```
P00>>> show heap_expand
```

If the `heap_expand` value is `NONE`, no further action is necessary.

If `heap_expand` is something other than `NONE`, users should take the next two steps.

1. Set the `heap_expand` environment variable value to `none`:

```
P00>>> set heap_expand none
```

2. "init" the console

The SRM chooses the correct value for boot. If more heap is needed, the SRM cycles through crash/reboot sequences until the heap is expanded enough to boot.

The panic is removed from the Tru64 UNIX 5.1 stream.

See Blitz TD 2942 for details.



## DEC7000/10000 and VAX 7000 - Issues With Firmware Upgrades

1. Sometimes the 7000 console will "run away" due to a problem in a powerup script (an INIT command placed in it) or due to a continuous machine check loop. You can't get to a >>> when this happens. Use this procedure to corrupt the console EEPROM.

During the init sequence when the "map" is being printed there is a pause about 2/3 of the way thru the "map". If you type the console command:

To corrupt the EEPROM on: VAX7600 and VAX7700 (first EEPROM address)

**dep -u F3800000 0**

To corrupt the EEPROM on: DEC7600 and DEC7700 (first EEPROM address)

**dep -u 3F3800000 0**

It will corrupt the eeprom and will cause it to halt after the "map". You then can do a "build eeprom" and reset the params.....

2. You may notice that environmental variable will not hold after an init or power off/on, or the BOOTDEF\_DEV and BOOT\_OSFLAGS variables are not even there. You may also get the following message on init.

**file open failed for eeprom0. Environmental variables cleared or missing**

This could indicate that EEPROMs are corrupt. Build EEPROM from the >>> should correct it. If it doesn't it is possible that you have a CPU problem.

3. On upgrades from a VAX 7000/10000 to a DEC 7000/10000 or when a new CIXCD module from stock is installed into a DEC 7000 it shows as unknown0 from the console. The CIXCD comes preloaded with VAX 7000 microcode. If it is installed in a DEC 7000/10000 it must have ALPHA firmware loaded into it. Below is the procedure to follow.

|        | Name  | Type   | Rev  | Mnemonic                                          |
|--------|-------|--------|------|---------------------------------------------------|
| LSB    |       |        |      |                                                   |
| 0+     | KN7AA | (8001) | 4000 | kn7aa0                                            |
| 7+     | MS7AA | (4000) | 0000 | ms7aa0                                            |
| 8+     | IOP   | (2000) | 0006 | iop0                                              |
| C0 XMI |       |        |      | xmi0                                              |
| 8+     | DWLMA | (102A) | 0105 | dwlma0                                            |
| A+     | DEMNA | (0C03) | 0803 | demna0                                            |
| E+     | ????? | (0C05) | 4611 | unknown0 (F/W ver 70 d (46x)<br>11 = H/W rev A01) |

>>>Boot LFU

Function? **Update**

Device? **unknown0** - Device name as seen by LFU

Device Name? **cixcd** - The type of firmware you want to load into the module

DO NOT ABORT

unknown0 updating to 3.0...reading device...verifying 3.0...passed

Function? **exit**

>>> show configuration

|        | Name  | Type   | Rev  | Mnemonic |
|--------|-------|--------|------|----------|
| LSB    |       |        |      |          |
| 0+     | KN7AA | (8001) | 4000 | kn7aa0   |
| 7+     | MS7AA | (4000) | 0000 | ms7aa0   |
| 8+     | IOP   | (2000) | 0006 | iop0     |
| C0 XMI |       |        |      | xmi0     |
| 8+     | DWLMA | (102A) | 0105 | dwlma0   |
| A+     | DEMNA | (0C03) | 0803 | demna0   |
| E+     | CIXCD | (0C2F) | 0311 | cixcd0   |

4. The KCM44 is a XMI tape controller that uses one of the KDM70 modules. After

replacing this module the KCM44 will show up as a KDM70. To correct this do the following.

```
>>>Boot LFU
Function? MODIFY KDM70#
Change ID on this KDM70 to KCM44? [Y/(N)] Y
Are you sure? [Y/(N)] Y
Changing ID from to KCM44....
Function? exit
```

5. If updating from an Infoserver the file name MUST be uppercase (ISL\_LVAX\_V07). There is also an issue booting off of an RRD43. It will timeout and not boot. You will need to use a different CD type (i.e.RRD42).

```
>>> boot -fl 0,0,0 exa0 -fi ISL_LVAX_V07
Initializing...
```

```
Booting...
Connecting to boot device exa0
Created device exa0.0.0.1.0
```

```
Requesting MOP Assistance Volunteer.....
MOP Assistance Volunteer found.
```

```
Loading...
..
Load completed!
...
...
jumping to bootstrap at 144400
```

```
Network Initial System Load Function
Version 1.1
```

| FUNCTION<br>ID |   | FUNCTION       |
|----------------|---|----------------|
| 1              | - | Display Menu   |
| 2              | - | Help           |
| 3              | - | Choose Service |
| 4              | - | Select Options |
| 5              | - | Stop           |

```
Enter a function ID value: 3
```

| OPTION<br>ID |   | OPTION                   |
|--------------|---|--------------------------|
| 1            | - | Find Services            |
| 2            | - | Enter known Service Name |

```
Enter an Option ID value: 1
```

```
Working
```

```
Servers found:: 1
```

```
...
#1
VAX7000_V07
```

```
08-00-2B-A4-37-10
```

```
ENTER A SERVICE NUMBER: 1
```

```
CPU:0 Console entry reason: HALT instruction in kernel mode
```

```
Entry PC: 00147481 Entry PSL:041F0600
boot failure
```

## **DEC3000-400 System Hangs After Upgrading Console Firmware to V6.1**

### **SYMPTOM:**

After upgrading the console firmware on the DEC3000 model 400 that has a V1.0 SROM to V6.1 console from the Update CD V3.2 (PN AG PTMWP-BE), the system hangs on boot with no VGA output. The serial console port shows a machine check message.

SYSTEM MACHINE CHECK ABORT HAS OCCURRED PC=000680.

NOTE: This same symptom may be seen upon upgrading the console firmware to V6.2 also.

### **SOLUTION:**

A BLITZ (TD 1888) gives the following solution:

The SROM needs to be at REV sV2.1(aka 6.1). The part number for the REV sV2.1 SROM is 23-333E7-00.

However, it has been observed that sometimes this alone has not resolved the problem. Replacing the SROM on the system module and the I/O module (54-21813-01) appears to resolve the problem.

To check the SROM firmware version issue the command

```
>>>SHOW CONFIG
```

```
CPU OK KN15-AA-V6.1-S45E-I077-sV2.1-DECchip 21064 P3.0
 |_____ good rom rev or higher -
```

```
 If sV1.0, do NOT upgrade firmware
 before replacing the chip
```

NOTE: If the upgrade is done and the system hangs you will no longer be able to issue the command >>>SHOW CONFIG. There is a warning listed on the ERRATA SHEET (AV-QMECA-TE) for CD V3.2.

Later versions of firmware may not successfully update with the sV1.0 SROM chip. The update may not report a failure but will not successfully update until the SROM chip is replaced.





## **DEC3000 Firmware Mismatch Between System and I/O Roms**

The DEC3000 has firmware ROMS on the system and I/O modules. If you replace one or both of these modules or if you do a firmware upgrade and do not have both the system and io update jumpers enabled you may get an error message at powerup complaining about a firmware mismatch.

### **Mismatch Firmware, SYS 4.0 / I/O 6.1**

The system may fail all IO tests (NI, SCSI etc) and because of this be unable to boot. At that point you may not get to a >>> because some power on self tests may fail or you may not be able to boot.

```
>>> boot -fl 0,80 dka400
```

```
INIT-S-CPU
INIT-S-RESET-TC
INIT-S-ASIC
INIT-S-MEM
INIT-S-NVR
INIT-S-CXT - It may hang at this spot. It should continue on as listed below
INIT-S-SCC
INIT-S-NI
INIT-S-SCSI
INIT-S-ISDN
INIT-S-TC0
AUDIT_BOOT_STARTS...
AUDIT_CHECKSUM_GOOD
AUDIT_LOAD_BEGINS
AUDIT_LOAD_DONE
```

BOOTFILE:

There are 2 possible reasons for failing to boot.

1. If we are hanging on boot due to device specific init routines failing try the following. This command prevents device specific init routines from running.

```
>>> Set BOOT_RESET off
```

Power cycle the system

```
>>>
```

Reload firmware so they match. Power off/on . At >>> **set BOOT\_RESET on** .  
Init and reboot

2. The CD boot might be failing because the console is not giving the CD drive enough time to settle down after it gets a bus reset. It may hang at the INIT-S-SCSI line. You might try setting SCSI RESET as follows.

You should set the SCSI\_RESET value to:

- 1 or 2 for hard disk boot
- 3 or 4 for floppy or CD boot
- 4,5, or 6 for Tape boot

```
>>> set SCSI_RESET 3
```

```
>>> set BOOT_RESET on
```



## **Contents of The System and I/O Roms on a DEC 3000**

On the DEC 3000 there are System and I/O roms that contain the following.

### **System Rom**

PALcode  
Console Program  
Serial Communications Controller Driver (SCC)  
SCSI Driver  
Graphics Port Driver  
ASIC Selftest  
NVR Selftest  
Shareable Routine (PROM\$ Routine)  
Console Service routine  
Device Configuration Data  
Ethernet driver

### **I/O Rom**

SCSI Selftest Utilities  
Ethernet Selftest Utilities  
ISDN/Audio Selftest Utilities  
SCC Selftest  
Memory Selftest  
MIPS Emulator



# **Firmware/Console Related** **Blitz's**



## **Firmware/Console Related Blitz's**

### **AlphaServers**

- TD 2941 Hard Error #8 on Alpha Servers with an HSJ controller

### **AlphaServer 300**

- [TD 2518-A] ASTN & ASRV w/ SRM V6.8 and the PCI ATMworks350 Errors

### **AlphaServer 400**

- [TD 2518-A] ASTN & ASRV w/ SRM V6.8 and the PCI ATMworks350 Errors

### **AlphaServer 800**

- [TD 2603-CR] AlphaServer 800 UltraSCSI Operation
- [TD 2592-A] AlphaServer 800 PCI 64-bit Operation & Multi-port Option Support
- [TD 2494-B] KZPCM Supported on AS800 with DUNIX, OpenVMS or Windows NT

### **AlphaServer 1000/1000A**

- [TD 2720-CR] AlphaServer 1000A EV4 Firmware V5.5 Upgrade Problem
- [TD 2197] AlphaServer 1000 & 1000A Model 5/xxx May Hang
- [TD 2147] AlphaServers - ALPHABIOS 5.23 & new HAL code
- [TD 1882\_A] KZPSA Data Corruption Seen in System Configurations
- [TD 1914] NVRAM Chip & Ethernet ID ROM Chip on Alphaserwer
- [TD 1755] Service Strategy for NVRAM chip on Alphaserwer

### **AlphaServer 1200**

- [TD 2789] AS4x00 and AS1200 V5.7-5 firmware fails SHOW DEVICE for RAID
- [TD 2781] AS4x00 and AS1200 V5.7-4 firmware fails on RAID configurations
- [TD 2668] V5.4 LFU Update Methods Failure on AS4x00 and AS1200 Statement
- [TD 2602] AS1200 & AS4x00 DEGPA-SA System Requirements
- [TD 2537] Digital UNIX PALcode 1.21-24 SRM firmware V5.2-1 Incorrect
- [TD 2440] AlphaServer 1200/4100 System and ECU Faults
- [TD 2429] Alpha Server 1200 with AlphaBIOS V5.62 and Older
- [TD 2332] AlphaBIOS Version 5.32

### **AlphaServer 2000/2100/2100A**

- [TD 2512] Replacement AS2X00 FRUs May Fail POST Due to SRM Firmware
- [TD 2185] Windows NT 4.0 requires NEW HAL on 2xxxxx server
- [TD 2148-A] AlphaServer 2xxx Systems with 120ns NVRAM
- [TD 2133] AlphaSrvr 2xxx SRM V4.6/ARC V4.49 May Cause Prob
- [TD 2089-A] AlphaServer 2100/2100A Model 5/xxx Multiprcsr
- [TD 2087] AlphaServer 2100/2100A Model 5/xxx Multiprocesr
- [TD 2083] AlphaServer 2100/2100A Powerup Diags Exceed Dynamic Memory
- [TD 2060] Corrections to the Sable to Lynx Upgrade
- [TD 1989] AlphaServer 2100A File Names Missing From Release Notes
- [TD 1914] NVRAM Chip & Ethernet ID ROM Chip on Alphaserwer
- [TD 1892-2] (Update) on replacing a B2110-AA B2111-AA
- [TD 1885] MS451-DA Memory Module Initialization Problem
- [TD 1882\_A] KZPSA Data Corruption Seen in System Configurations
- [TD 1876] EISA Prestoserve Option - Data Corruption of EISA SCSI Disks on AlphaServer 2x00 Systems
- [TD 1755] Service Strategy for NVRAM chip on Alphaserwer

### **AlphaServer 4000/4100**

- [TD 2789] AS4x00 and AS1200 V5.7-5 firmware fails SHOW DEVICE for RAID
- [TD 2781] AS4x00 and AS1200 V5.7-4 firmware fails on RAID configurations
- [TD 2778] DS20E EV67 CPU Upgrade and SFM Revision
- [TD 2668] V5.4 LFU Update Methods Failure on AS4x00 and AS1200 Statement
- [TD 2654] OpenVMS Alpha Galaxy configuration support info for OpenVMS V7.2
- [TD 2602] AS1200 & AS4x00 DEGPA-SA System Requirements
- [TD 2562] SRM Console Firmware V5.3-1 Update Changes
- [TD 2537] Digital UNIX PALcode 1.21-24 SRM firmware V5.2-1 Incorrect
- [TD 2440] AlphaServer 1200/4100 System and ECU Faults
- [TD 2431] Correct Firmware for BA3050-AA on AlphaServer 4100/4000
- [TD 2429] Alpha Server 1200 with AlphaBIOS V5.62 and Older
- [TD 2332] AlphaBIOS Version 5.32
- [TD 2328] Alpha Server 4100 - CPU Module Family - REISSUE
- [TD 2312] Alpha Server 4100 - Windows NT 4.0
- [TD 2251] Alpha Server 4100 - SRM V4.8-6, 466 MHz CPU's
- [TD 2248] Alpha Server 4100 - V4.0 FRU Table and DECEvent
- [TD 2247] AlphaServer 4100 - Memory Test Environment Var
- [TD 2240] Alpha Server 4100 - SRM V4.8-5, Memory Test EV
- [TD 2235] Alpha Server 4100 - SRM Console Version 4.8-5
- [TD 2232-A] AlphaServer 4000/4100 Minimum Rev Support
- [TD 2227] Alpha Server 4100 - CPU Module B3004-BA
- [TD 2226] Alpha Server 4100 - SRM Console V4.8-3
- [TD 2222] Alpha Server 4100 - SRM bootdef\_dev
- [TD 2221] Alpha Server 4100 - AlphaBIOS V5.28
- [TD 2220] Alpha Server 4100 - Windows NT Install Failure
- [TD 2210] Alpha Server 4100 - Windows NT 3.51 HAL Rev. C
- [TD 2188] Alpha Server 4100 - 2 GByte Memory Option
- [TD 2170] AlphaServer 4100 Loosing CPU's between SRM & AB
- [TD 2164] AlphaServer 4100 - AlphaBIOS V5.24 Web Location
- [TD 2161] Alpha Server 4100 - Windows NT Version 4.0A HAL
- [TD 2160] Alpha Server 4100 - AlphaBIOS V5.24
- [TD 2158] AlphaServer 4000/4100 Digital UNIX memory prob
- [TD 2151] Alpha Server 4100 - Windows NT 4.0 Installation
- [TD 2150] Alpha Server 4100 - SRM Console V2.0-3
- [TD 2127] Alpha Server 4100 TEST Command & RAID Adapters
- [TD 2126] Alpha Server 4100 - Environmental Status Events
- [TD 2116] Alpha Server 4100 - AlphaBios 5.21, NT4.0
- [TD 2111] Alpha Server 4100 - Windows NT V3.51 HAL
- [TD 2110] Alpha Server 4100 - B3050 Field Spares
- [TD 2104] Alpha Server 4100 - AlphaBIOS 5.21 Release
- [TD 2088] Alpha Server 4100 SWXCR Utilities
- [TD 2068] Alpha Server 4100 Minimum Firmware Revision

### **AlphaServer 8200/8400**

- [TD 2962] ASRV GS60,GS140; Galaxy Secondary Partitions Hang
- [TD 2732] ARC Utilities Failing During Run Command
- [TD 2664-A] UPDATE ON AlphaBIOS & HAL Incompatibilities w/Firmware
- [TD 2654] OpenVMS Alpha Galaxy configuration support info for OpenVMS V7.2
- [TD 2596] AlphaServer 8200/8400 LFU for V5.3 Console, XMI Adapters
- [TD 2567-A] EISA Configuration Utility (ECU) on AlphaServer 8200/8400
- [TD 2510] AlphaBIOS for AlphaServer 8x00 WindowsNT With Console V5.2
- [TD 2491] New Firmware Loader for KZPSC and KZPAC Controllers
- [TD 2451] CIXCD V5 Firmware Recall
- [TD 2449] Alpha Server 8200/8400 Configuration Problems
- [TD 2346] AS8400/8200 Reqs. for KN7CE-AB Rev.E01/E02 & MS7CC-GA Mem Mod
- [TD 2262] AlphaServer 8200/8400, System Hang/Checklist



- [TD 2252] AlphaServer 8400/8200 platforms - possible hang
- [TD 2234] Recalling CIXCD V8 firmware
- [TD 2192] AlphaServer 8400/8200 & V4.1-6 Console firmware
- [TD 2086] AlphaServer 8200/8400 may fail
- [TD 2085] AlphaServer 8200/8400 w/KZPAA & OpenVMS V6.2-1H3
- [TD 2080] LASER MODULE FIRMWARE MATCHING
- [TD 2063] DWLPA/54-24721-01 Console Requirement
- [TD 1987] TURBOLaser Uniprocessor Upgrade
- [TD 1950] AlphaServer 8x00; Mixing Console & CPU Revisions
- [TD 1896] PCI Ethernet Problems on AlphaServer 8200/8400
- [TD 1882\_A] KZPSA Data Corruption Seen in System Configurations
- [TD 1874] AlphaServer 8400 LFU Updates to CIXCD Modules
- [TD 1873] AlphaServer 8200/8400 Problem with KZPSA Utility

#### **AlphaServer DS10/ Professional WorkStation XP900**

- [TD 2965-CR] DS10/10L, XP900, DS20/20E & ES40 EnVar Data Loss
- [TD 2953-CR] DS10/DS10L Console Firmware V6.0-8 Problem
- [TD 2933-CR] Alpha Firmware Not Booting On DS10 600MHz System
- [TD 2893] DS10-Euro-Supercluster Power Supply
- [TD 2829] WEBES/Compaq Analyze - Op Sys/Patches Requirements
- [TD 2714] DS10/XP900 Benchmark TOY Clock Parameter Loss

#### **Professional WorkStation XP1000/XP1000G**

- [TD 2822-CR] XP1000 Firmware Update Problems (V5.8-3)
- [TD 2692] USB Issue with Alpha V5.5 Firmware on XP1000 & XP1000G

#### **AlphaServer DS20/DS20E**

- [TD 2965-CR] DS10/10L, XP900, DS20/20E & ES40 EnVar Data Loss
- [TD 2916] DS20/DS20E Reports Wrong Speed On Power Up
- [TD 2892] DS20/DS20E V5.9-4 Firmware Reports System Event At Powerup
- [TD 2829] WEBES/Compaq Analyze - Op Sys/Patches Requirements
- [TD 2639-CR] AlphaServer DS20 Firmware Reqs - 3 GB Memory or >
- [TD 2622-CR} UNIX Workaround for PAL Code Error

#### **Compaq AlphaServer ES40**

- [TD 2965-CR] DS10/10L, XP900, DS20/20E & ES40 EnVar Data Loss
- [TD 2957-CR] ES40; V6.0A Console Firmware Required for PBXDA-AC Rev. F
- [TD 2943-CR] ES40 V6.0 Firmware; Do Not Use In Galaxy Environment
- [TD 2942] UNIX V4.0G ES40 & GS80/GS160/GS320 Systems May Not Boot
- [TD 2867] ES40 Firmware CD QC-086AA-HC CPU Upgrade Kit Is Obsolete
- [TD 2829] WEBES/Compaq Analyze - Op Sys/Patches Requirements
- [TD 2787-CR] AlphaServer ES40 PALcode Correction with Firmware Update
- [TD 2706-CR] AlphaServer ES40 Firmware Update Procedure
- [TD 2703-CR] New Console Firmware for AlphaServer ES40
- [TD 2622-CR} UNIX Workaround for PAL Code Error

#### **Compaq AlphaServer GS60/GS60E/GS140**

- [TD 2962] ASRV GS60,GS140; Galaxy Secondary Partitions Hang
- [TD 2887-A] GS140, GS60, Firmware V5.9-2 Console Problem
- [TD 2868] GS60,GS140, Alphserver8200/8400 VGA graphics
- [TD 2766] AlphaServer GS60/GS60E/GS140 System Hangs/Console V5.6-6
- [TD 2732] ARC Utilities Failing During Run Command
- [TD 2712] AlphaServer GS60/GS140 Systems Firmware V5.5-23
- [TD 2701] AlphaServer GS60/GS140 Systems Firmware V5.5-17

- [TD 2678] Firmware Upgrade for AlphaServer GS60/GS140 Systems
- [TD 2651-CR] AlphaServer GS60/GS140 Console Upgrade /Firmware CD V5.4
- [TD 2622-CR} UNIX Workaround for PAL Code Error
- [TD 2610-CR-B] Update on Errors from Oracle 8.0.4.x w/DUNIX & EV6
- [TD 2594] AlphaServer GS60/GS140 Mandatory Console Firmware Upgrade
- [TD 2578] Compaq AlphaServer GS60/GS140 Problems and Solutions

#### **Compaq AlphaServer GS80/GS160/GS320**

- [TD 2942] UNIX V4.0G ES40 & GS80/GS160/GS320 Systems May Not Boot
- [TD 2921] GS80/160/320 SRM INIT Heap Expand Loop Explanation
- [TD 2917] GS80/GS160/GS320 To Enable PCI Drawer Power Redundancy
- [TD 2909] Q-Vet For GS80/160/320 Included On Alpha Sys Firmware Upd CD
- [TD 2883-A] GS80/160/320 Systems Problem With WWIDMGR; Updated SOLUTION
- [TD 2859] GS80/160/320 Possible Global Port Faults/Memory ECC Errors

#### **Digital Server 3300**

- [TD 2503] DIGITAL Server BIOS Doesn't Contain SCU
- [TD 2457] Important DIGITAL Server Cluster Information

#### **Digital Server 5300**

- [TD 2781] AS4x00 and AS1200 V5.7-4 firmware fails on RAID configurations
- [TD 2668] V5.4 LFU Update Methods Failure on AS4x00 and AS1200 Statement
- [TD 2537] Digital UNIX PALcode 1.21-24 SRM firmware V5.2-1 Incorrect
- [TD 2503] DIGITAL Server BIOS Doesn't Contain SCU
- [TD 2457] Important DIGITAL Server Cluster Information
- [TD 2440] AlphaServer 1200/4100 System and ECU Faults
- [TD 2429] Alpha Server 1200 with AlphaBIOS V5.62 and Older

#### **Digital Server 7300**

- [TD 2781] AS4x00 and AS1200 V5.7-4 firmware fails on RAID configurations
- [TD 2668] V5.4 LFU Update Methods Failure on AS4x00 and AS1200 Statement
- [TD 2537] Digital UNIX PALcode 1.21-24 SRM firmware V5.2-1 Incorrect
- [TD 2503] DIGITAL Server BIOS Doesn't Contain SCU

#### **AlphaStation 200**

- [TD 2518-A] ASTN & ASRV w/ SRM V6.8 and the PCI ATMworks350 Errors
- [TD 2084] Corrupted ISA configuration data stored in NVR

#### **AlphaStation 250**

- [TD 2518-A] ASTN & ASRV w/ SRM V6.8 and the PCI ATMworks350 Errors
- [TD 2133] AlphaSrvr 2xxx SRM V4.6/ARC V4.49 May Cause Prob

#### **AlphaStation 255**

- [TD 2518-A] ASTN & ASRV w/ SRM V6.8 and the PCI ATMworks350 Errors
- [TD 2371] KZPBA-CA UltraSCSI Adapter
- [TD 2193] Alphastation 255 KZPSC Problem

#### **AlphaStation 400**

- [TD 2518-A] ASTN & ASRV w/ SRM V6.8 and the PCI ATMworks350 Errors

#### **AlphaStation 500**

- [TD 2658-CR-A] AS500 Firmware Upgrade Problem with AS500\_7\_0.EXE, .SYS
- [TD 2371] KZPBA-CA UltraSCSI Adapter

- [TD 2321] AS500 w/SRM V6.4-5 hangs w/KZPSA-BB option

#### **AlphaStation 600**

- [TD 1963] New Version Firmware Available for Alphastation 600
- [TD 2371] KZPBA-CA UltraSCSI Adapter
- [TD 2275] AS600 with SRM V6.4-5 hangs w/ KZPSA-BB option
- [TD 2054] Open APX VMS V6.2 boot problem on AS600 FIS
- [TD 1944\_A] Firmware for AlphaStation 600 Available Soon

#### **AlphaStation 600A**

- [TD 2371] KZPBA-CA UltraSCSI Adapter

#### **Digital Personal WorkStation a/au Series**

- [TD 2474] Minimum Revisions for Modules on MIATA GL UNIX Systems
- [TD 2436] Unexpected Machine Checks on DWPS with Bcache
- [TD 2371] KZPBA-CA UltraSCSI Adapter

#### **Digital Personal WorkStation - Miata GL**

- [TD 2474] Minimum Revisions for Modules on MIATA GL UNIX Systems
- [TD 2436] Unexpected Machine Checks on DWPS with Bcache
- [TD 2371] KZPBA-CA UltraSCSI Adapter

#### **Digital Personal WorkStation - KryoTech 767A**

- [TD 2474] Minimum Revisions for Modules on MIATA GL UNIX Systems
- [TD 2436] Unexpected Machine Checks on DWPS with Bcache
- [TD 2371] KZPBA-CA UltraSCSI Adapter

#### **Digital Ultimate Personal WorkStation**

- [TD 2781] AS4x00 and AS1200 V5.7-4 firmware fails on RAID configs
- [TD 2668] V5.4 LFU Update Methods Failure on AS4x00 and AS1200 Statement
- [TD 2562] SRM Console Firmware V5.3-1 Update Changes
- [TD 2537] Digital UNIX PALcode 1.21-24 SRM firmware V5.2-1 Incorrect
- [TD 2440] AlphaServer 1200/4100 System and ECU Faults
- [TD 2429] Alpha Server 1200 with AlphaBIOS V5.62 and Older
- [TD 2332] AlphaBIOS Version 5.32

#### **DEC 3000-400**

- [TD 1888] DEC3000-400, SROM rev 6.1 Needed, when Upgrading Firmware to V6.1

#### **DEC 3000-500**

- [TD 1696] ALPHA AXP DEC3000 MODEL 500/500X/800/900 SYSTEM & I/O ROM MATRIX
- [TD 1658] INCOMPATIBILITY FIRMWARE PROBLEM ALPHA AXP
- [TD 1329] FW update info on DEC 3000Model 500

#### **DEC 3000-800**

- [TD 1696] ALPHA AXP DEC3000 MODEL 500/500X/800/900 SYSTEM & I/O ROM MATRIX
- [TD 1658] INCOMPATIBILITY FIRMWARE PROBLEM ALPHA AXP

#### **DEC 3000-900**

- [TD 1696] ALPHA AXP DEC3000 MODEL 500/500X/800/900 SYSTEM & I/O ROM MATRIX

#### DEC 4000-600

- [TD 1585] MS430-FA (B2011-AA, 512MB)/DEC 4000 Model 6xx / 7xx Series
- [TD 1338] PROBLEMS ENCOUNTERED WHEN INSTALLING DEC 4000 MODEL 610 CPU

#### DEC 7000 / 10000

- [TD 2832] KZPCC-CE Configs, Drive Failure/Removal Causes System Crash
- [TD 2015] DEC7000 Console V4.5 Problem w/ Single CI Path to HSJ40
- [TD 1947] VAX7000 & DEC7000 Memory Configuration Restrictions
- [TD 1865] DEC7000/10000 Console V4.2 Has a Serious Problem
- [TD 1732] DEC7000 with >2GB mem, CIXCD, run. VMS may crash
- [TD 1559] DEC 7000 and VAX 7000 MOP Booting Problem
- [TD 2451] CIXCD V5 Firmware Recall
- [TD 2234] Recalling CIXCD V8 firmware
- [TD 2080] LASER MODULE FIRMWARE MATCHING
- [TD 1858\_A] VAX7000, DEC7000 Using wrong LFU => CPU unusable
- [TD 1752-A] OpenVMS AXP and DEC7000 Crash Dump Problems
- [TD 1336] CIXCD Microcode on Alpha/VAX VMSclusters
- [TD 1311] VAX 7000/10000, DEC 7000/10000 AXP LFU Utility

#### VAX 7000 / 10000

- [TD 2557] CIXCD Firmware for VAX Systems
- [TD 1974] VAX7000 Console V4.1 & Show Power
- [TD 1959] VAX7000-8XX Initialization Problem
- [TD 1763] DEMNA Firmware Problem
- [TD 1651] VAX 7000/10000 - HSD05 - Reboot Problem
- TD 1566 VAX 7000/10000 - HSJ40 - Single Path Booting Problem
- TD 1559 DEC 7000 and VAX 7000 MOP Booting Problem
- [TD 1858\_A] VAX7000, DEC7000 Using wrong LFU => CPU unusable
- [TD 1363] VAX7000/VAX10000 Console V2.6
- [TD 1348] VAX7000 and VAX10000 systems running in an SMP environment
- [TD 1311] VAX 7000/10000, DEC 7000/10000 AXP LFU Utility

#### Controllers / Adapters

- [TD 2919] CIXCD 4K Firmware may cause VC loss and Port Timeout
- [TD 2884-CR] New DS-KGPSA-CB/CY Firmware For WNT 4.0 & Windows 2000
- [TD 2871] DS-KZPCC-CE Can Allow Data Inconsistency
- [TD 2831] DS-KGPSA-xx Limited Risk of Data Inconsistency
- [TD 2807-C] xx-KGPSA-xx, SF303a1.zwc, & DD303a1.awc Firmware Rev Rel
- [TD 2675] KGPSA Firmware Revision SF220x2.awc Released
- [TD 2656-CR] "WWIDMGR User's Guide" Can't Be Located On Firmware V5.4 CD
- [TD 2652] KZESC and KZPSC RAID Controllers Not Supported on UNIX 5.x
- [TD 2602] AS1200 & AS4x00 DEGPA-SA System Requirements
- [TD 2557] CIXCD Firmware for VAX Systems
- [TD 2497] TSZ07 Tape Drive Cannot Be Seen at Console Prompt
- [TD 2494-B] KZPCM Supported on AS800 with DUNIX, OpenVMS or Windows NT
- [TD 2491] New Firmware Loader for KZPSC and KZPAC Controllers
- [TD 2419] Enabling Active Negation on KZPSC RAID Controllers
- [TD 2402-A] TLZ09 Firmware Update for Q-Logic SCSI Controllers
- [TD 2371] KZPBA-CA UltraSCSI Adapter
- [TD 2298-A] Alpha Server 4100 - SCSI Bus & Related Errors
- [TD 2223] Alpha Server 4100 - Raid Initialization Times
- [TD 2127] Alpha Server 4100 TEST Command & RAID Adapters
- [TD 2088] Alpha Server 4100 SWXCR Utilities
- [TD 2048] KZPSC with large cache (MS100-xx) fail w/21164
- [TD 1882\_A] KZPSA Data Corruption Seen in System Configurations
- [TD 1874] AlphaServer 8400 LFU Updates to CIXCD Modules

- [TD 1873] AlphaServer 8200/8400 Problem with KZPSA Utility



# **References**





## Alpha Systems Notefiles

**Note:** Some of these notesfile may no longer be available.

| <b>Notesfile Name</b>      | <b>Subject</b>                                               | <b>Moderator if Restricted</b>                      |
|----------------------------|--------------------------------------------------------------|-----------------------------------------------------|
| DANGER::ALPHASTATION       | AlphaStations                                                |                                                     |
| DANGER::ALPHASTATION500    | AlphaStation500                                              |                                                     |
| DANGER::CORELLE            | AlphaServer 800                                              | ( <b>Add entry danger::notes\$library:corelle</b> ) |
| DANGER::MIKASA             | AlphaServer 1000/1000A                                       |                                                     |
| SSDEVO::HS1XX_PRODUCT      | HS111,HS121,HS211,HS221,HS241,HSXNA (Alphaserver 1000 based) |                                                     |
| DANGER::ES_DS_ALPHASERVERS | Goldrush (DS20), Clipper (ES40), and Web Brick (DS10)        |                                                     |
| KRYSTL::WILDFIRE           | Wildfire (GS80, GS160 and GS320)                             |                                                     |
| DANGER::ALPHASERVER_4100   | AlphaServer 4100                                             |                                                     |
| POBOXA::RAWHIDE            | Rawhide                                                      | - Restricted (send mail to POBOXB::DUNCAN)          |
| DANGER::TURBOLASER         | AlphaServer 8200/8400                                        |                                                     |
| DANGER::TLASER_SPECS       | Turbolaser Specifications                                    | - Restricted (send mail to DANGER::HARTWELL)        |
| COZMO::JENSEN              | Jensen                                                       |                                                     |
| MVBLAB::DEMISABLE NOTES    | Demi-Sable Notes                                             | - Restricted (send mail to DUENDE::FLORES)          |
| MVBLAB::DEMISABLE_SPECS    | Demi-Sable Specifications                                    | - Restricted (send mail to DUENDE::FLORES)          |
| AFWL::SABLE                | SABLE                                                        |                                                     |
| DECWET::SABLE-NT           | Windows NT for DEC2100 Model A500                            |                                                     |
| DUFFY::SABLE NOTES         | SABLE NOTES                                                  | - Restricted (send mail to DUENDE::FLORES)          |
| DUFFY::SABLE_QUAL          | SABLE_QUAL                                                   | - Restricted (send mail to DUENDE::FLORES)          |
| DUFFY::SABLE_SPECS         | SABLE SPECIFICATIONS                                         | - Restricted (send mail to DUENDE::FLORES)          |
| DANGER::DEC3000            | DEC 3000 Platform                                            |                                                     |
| DANGER::PELICAN            | DEC 3000-300                                                 |                                                     |
| DANGER::FLAMINGO           | DEC3000 M400/500/500/600/700/800/90                          | - Restricted (send mail to DANGER::SYSTEM)          |
| PROXY::LASER               | VAX 7000/10000 and DEC 7000/10000                            | - Restricted (send mail to DANGER::SYSTEM)          |
| PROXY::LASER_SPECS         | Laser Specifications Conference                              |                                                     |

## Alpha Systems WebPages

- <http://ecs2.mro.cpgcorp.net/gsbb>
  - [http://webshooter2.mro.cpgcorp.net/ddt\\_tools/index.html](http://webshooter2.mro.cpgcorp.net/ddt_tools/index.html)
  - <http://frodo.mro.cpgcorp.net/>
  - <http://frodo.mro.cpgcorp.net/alphaserver-inside/>
  - <http://rwhidl.mro.cpgcorp.net/goldrush/>
  - <http://webshooter2.mro.cpgcorp.net/DS20E/>
  - <http://webshooter2.mro.cpgcorp.net/tincup/index.html>
  - [http://webshooter2.mro.cpgcorp.net/clipper\\_pvt/index.html](http://webshooter2.mro.cpgcorp.net/clipper_pvt/index.html)
- GS80/160/320 Bulletin Board  
Engineering Tools Website  
AlphaServer Engineering webpage  
AlphaServer-Inside  
DS20 (Goldrush) webpage  
DS20 (Goldrush) webpage  
AlphaServer 1200 (Tincup) webpage  
ES40 Clipper PVT page

## **Firmware Document on Cybrary**

- <http://cybrary.inet.cpqcorp.net/ARCHIVE/PUBS/USERS/ALPHA/FIRMWARE-UPDATE-V61.pdf> V6.1 doc in PDF format

## **Firmware Pages on Cybrary**

- [http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/FIRMWARE/firmware\\_procedures.html](http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/FIRMWARE/firmware_procedures.html)

### **Failsafe Loader Procedures**

- |                                                                                                                                                                           |                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| • <a href="http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/failsafe_loader.html">http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/failsafe_loader.html</a>                   | Failsafe loader Description      |
| • <a href="http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/fsl_update.html">http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/fsl_update.html</a>                             | AlphaServer/AlphaStation FSL     |
| • <a href="http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/as800_floppy.html">http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/as800_floppy.html</a>                         | AlphaServer 800 Floppy Procedure |
| • <a href="http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/ASRV2000/2x00_fsl.html">http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/ASRV2000/2x00_fsl.html</a>               | AlphaServer 2x00 FSL             |
| • <a href="http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/ASRV4000/4x00_fsl_update.html">http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/ASRV4000/4x00_fsl_update.html</a> | AlphaServer 4x00 FSL             |
| • <a href="http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/ES40/es40_fsl.html">http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/ES40/es40_fsl.html</a>                       | AlphaServer ES40 FSL             |
| • <a href="http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/DS20/ds20_fsl.html">http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/DS20/ds20_fsl.html</a>                       | AlphaServer DS20 FSL             |
| • <a href="http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/DS10/ds10_fsl.html">http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/DS10/ds10_fsl.html</a>                       | AlphaServer DS10 FSL             |
| • <a href="http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/dsrv_fsl_update.html">http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/dsrv_fsl_update.html</a>                   | Digital Server FSL               |
| • <a href="http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/dpws_fsl_update.html">http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/dpws_fsl_update.html</a>                   | Digital Personal Workstation FSL |

### **Update Procedures**

- |                                                                                                                                                                                   |                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| • <a href="http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/FIRMWARE/fw_update_methods.html">http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/FIRMWARE/fw_update_methods.html</a>       | AlphaServer/AlphaStation         |
| • <a href="http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/as800_floppy.html">http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/as800_floppy.html</a>                                   | AlphaServer 800 Floppy Procedure |
| • <a href="http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/FIRMWARE/es40_rmc_update.html">http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/FIRMWARE/es40_rmc_update.html</a>           | AlphaServer ES40 RMC Update      |
| • <a href="http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/FIRMWARE/turbo_update_methods.html">http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/FIRMWARE/turbo_update_methods.html</a> | Turbolaser                       |
| • <a href="http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/FIRMWARE/gs_update_methods.html">http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/FIRMWARE/gs_update_methods.html</a>       | GS60/GS140                       |
| • <a href="http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/FIRMWARE/wf_firmware_update.html">http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/FIRMWARE/wf_firmware_update.html</a>     | GS80/GS160/GS320                 |
| • <a href="http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/3000-500/3000_update.html">http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/3000-500/3000_update.html</a>                   | DEC 3000                         |
| • <a href="http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/FIRMWARE/dec7000_firmware.html">http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/FIRMWARE/dec7000_firmware.html</a>       | DEC 7000                         |
| • <a href="http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/FIRMWARE/vax7000_firmware.html">http://Cybrary.inet.cpqcorp.net:/SYSTEMS/ALPHA/FIRMWARE/vax7000_firmware.html</a>       | VAX 7000                         |

### **Utilities/Adapters**

- |                                                                                                                                                                                                             |                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| • <a href="http://Cybrary.inet.cpqcorp.net/STORAGE/FIBRE/ADAPTERS/COMPAQ/KGPSA/kgpsa_fw_update_intro.htm">http://Cybrary.inet.cpqcorp.net/STORAGE/FIBRE/ADAPTERS/COMPAQ/KGPSA/kgpsa_fw_update_intro.htm</a> | KGPSA Update Procedures |
| • <a href="http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/ASRV8400/rcu.html">http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/ASRV8400/rcu.html</a>                                                             | RCU on TurboLaser       |
| • <a href="http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/FIRMWARE/turbo_utility.html">http://Cybrary.inet.cpqcorp.net/SYSTEMS/ALPHA/FIRMWARE/turbo_utility.html</a>                                         | Utilities on Turbolaser |

## **Firmware Locations On The Internet**

- <http://Cybrary.inet.cpgcorp.net>
- <http://Cybrary.inet.cpgcorp.net/DOWNLOAD/FIRMWARE/SYSTEMS/ALPHA>
- <http://ftp.digital.com/pub/DEC/Alpha/firmware/> Digital's Firmware website
- <http://ftp.digital.com/pub/Digital/Alpha/firmware/>
- <ftp://ftp.digital.com/pub/DEC/Alpha/firmware/>
- <ftp://ftp.digital.com/pub/Digital/Alpha/firmware/>
- <http://ecs2.mro.cpgcorp.net/wf/> Wildfire firmware location
- <http://16.129.13.229/wildfire/> Wildfire firmware location
- <http://www.compaq.com/support/files/alphant/index.html>

## **Firmware Locations Online**

CSC32::ISG\$COMMON:[LASER.DEC7000.UCODE]

See PROXY::LASER note 673 for info on AXP7000/10000 firmware  
ISG\$COMMON:[LASER.DEC7000]LFU\_DEC\_BOOT\_PROCEDURE.TXT

CSC32::ISG\$COMMON:[LASER.VAX7000.UCODE]

See PROXY::LASER note 674 for info on VAX7000/10000 firmware  
ISG\$COMMON:[LASER.VAX7000]LFU\_VAX\_BOOT\_PROCEDURE.TXT;42

## Documentation Sources and Page Numbers

| <b>Document Title</b>                                                                   | <b>Part Number</b>  | <b>Page Numbers</b>                        |
|-----------------------------------------------------------------------------------------|---------------------|--------------------------------------------|
| AlphaStation 200 Series User Information                                                | (EK-PCDTA-UI .E01)  | C7 - C9, Appendix E                        |
| AlphaStation 200/400 Series Technical Information                                       | (EK-PCDSA-TI .PRE)  | 2-13 to 2-17                               |
| AlphaStation 250 Series User Information                                                | (EK-PCCTA-UI .A01)  | C7 to C9, Appendix E                       |
| AlphaStation 255 Series User Information                                                | (EK-VLLXA-UI .B01)  | B10 to B13, Appendix D                     |
| AlphaStation 400 Series CPU Module Information                                          | (EK-PCDSA-CI .A01)  | 1-5                                        |
| AlphaStation 400 Series User Information                                                | (EK-PCDSA-UI .B01)  | Appendix E                                 |
| AlphaStation 500 Series User Information                                                | (EK-ALPH5-UI .A01)  | C10 to C12, Appendix E                     |
| Maverick System Spec                                                                    |                     | Chapter 6 pages 59-62                      |
| AlphaStation 600 Series User Information                                                | (EK-AS800-UI .A01)  | C10 - C12, Appendix E                      |
| AlphaStation 600A Series User Information                                               | (EK-ALG55-UI .A01)  | 4-26, 7-7 - 7-10                           |
| AlphaServer 300 User Guide                                                              | (EK-AS300-UG .A01)  | A4 - A6                                    |
| AlphaServer 800 Service Guide                                                           | (EK-ASV80-SG .A01)  | 2-4 to 2-5, 2-21 to 2-23, 7-27, Appendix A |
| AlphaServer 400 Series User Information                                                 | (EK-PCSVA-UI .A01)  | C8 to C9, Appendix E                       |
| AlphaServer 1000 Owners Guide                                                           | (EK-DTLSV-OG .B01)  | 7-4, 8-18 to 8-19                          |
| AlphaServer 1000 Service Guide                                                          | (EK-DTLSV-SV .B01)  | 2-17 to 2-18                               |
| AlphaServer 1000A Owners Guide                                                          | (EK-ALPSV-OG .A01)  | 8-19 to 8-20, 9-12 to 9-15                 |
| AlphaServer 1000A Service Guide                                                         | (EK-ALPSV-SV .B01)  | 2-30 to 2-34, Appendix A                   |
| AlphaServer 1200 Users Guide                                                            | (EK-AS120-UG .A01)  | 3-28 to 3-46                               |
| AlphaServer 1200/DIGITAL Ultimate Workstation 533 Service Manual                        |                     |                                            |
| AlphaServer 2000/2100/2100 RM/2100 CAB Series Service Guide                             | (EK-AS120-SV .A01)  | 2-24, Appendix A                           |
| Digital 2100 Server Model 500MP-R Series Installation/Owners                            | (EK-KN450-SV .B01)  | 2-18 to 2-21                               |
| AlphaServer 2100A Owners                                                                | (EK-KN450-RM .A01)  | 5-28 to 5-30                               |
| AlphaServer 2100A RM Series Installation/Owners                                         | (EK-2100A-OP .A01)  | 4-9 to 4-11                                |
| AlphaServer 2100A RM/2100A Cab Series Service Guide                                     | (EK-2100A-RM .A01)  | 6-11                                       |
| AlphaServer 4100 Service Manual                                                         | (EK-2100A-SV .A01)  | 2-18 to 2-22                               |
| AlphaServer 4100 Central Office System Installation/Owners/Service Guide                | (EK-4100A-SV .A01)  | Appendix A                                 |
| AlphaServer 8200/8400 Service Manual - Part 2                                           | (EK-410CO-IN .A01)  | 1-7, Appendix D                            |
| AlphaServer GS60/140 and 8200/8400 Operations Manual                                    | (EK-T8030-SV2.A01)  | Chapter 6                                  |
| AlphaServer DS/ES Systems Maintenance Course Guide                                      | (EK-T8030-OP .C01)  | Appendix B                                 |
| AlphaServer DS10 / DS10L AlphaStation DS10 Console Reference                            | (EY-Z417E-SG-0001)  | Chapter 6                                  |
| AlphaServer DS20 Service Manual                                                         | (EK-DS10S-CR .C01)  | 1-24 to 1-35                               |
| Compaq AlphaServer DS20 User's Guide                                                    | (EK-AS140-SV .A01)  | Appendix C                                 |
| Compaq AlphaServer ES40 and AlphaStation ES40 Service Guide                             | (EK-AS140-UG .A01)  | 3-26 to 3-44, Chapters 4 and 5             |
| AlphaServer ES40 Owner's Guide                                                          | (EK-ES240-SV .B02)  | 2-12, 3-30 to 3-33                         |
| AlphaServer GS80/160/320 AlphaStation GS Series Service Manual                          | (EK-ES240-UG .B01)  | Chapter 6                                  |
| AlphaServer GS80/160/320 Firmware Reference Manual                                      | (EK-ES240-OG .B01)  | Chapter 6                                  |
| DEC 3000 Model 300 Series AXP Hardware Reference Manual                                 |                     | Chapter 8                                  |
| DEC 3000 Models 400/400S AXP Technical Summary                                          | (EK-GS320-SV .C01)  | Appendix D                                 |
| DEC 3000 Models 500/500S AXP Service info                                               | (EK-GS320-RM .C01)  | Appendix B                                 |
| DEC 3000 Models 500X AXP Service info                                                   | (EK-PELLCN-OG .C01) | 1-14 to 1-15                               |
| DEC 3000 Models 600/600S and 800/800S AXP Service Info                                  | (EK-SNDPR-TM .B01)  | 1-12                                       |
| DEC 3000 AXP Systems and TURBOchannel Options Update Utility Procedures (Release Notes) | (EK-FLAMI-SV .C01)  | 2-3 to 2-5, Appendix A                     |
|                                                                                         | (EK-HOTPI-SV .A01)  | 2-2 to 2-3, Appendix A                     |
|                                                                                         | (EK-FLSPC-SV .A01)  | 2-2, 2-7, 7-3 to 7-5                       |





## Index

### A

|                               |    |
|-------------------------------|----|
| Alpha Windows NT Matrix ..... | 21 |
|-------------------------------|----|

### B

|               |     |
|---------------|-----|
| Blitz's ..... | 513 |
|---------------|-----|

### E

|                                        |     |
|----------------------------------------|-----|
| ECU - EISA Configuration Utility ..... | 343 |
|----------------------------------------|-----|

#### Environmental Variables

|                           |     |
|---------------------------|-----|
| Bus Probe Algorithm ..... | 311 |
| Definitions .....         | 299 |
| arc_enable .....          | 299 |
| auto_action .....         | 299 |
| baud .....                | 299 |
| boot_dev .....            | 299 |
| boot_file .....           | 300 |
| boot_osflags .....        | 300 |
| boot_reset .....          | 300 |
| bootdef_dev .....         | 300 |
| booted_dev .....          | 300 |
| booted_file .....         | 300 |
| booted_osflags .....      | 300 |
| bus_probe_algorithm ..... | 300 |
| console .....             | 300 |
| console_mode .....        | 300 |
| cpu_enabled .....         | 301 |
| cpu_mask .....            | 301 |
| cpu_primary .....         | 301 |
| dump_dev .....            | 301 |
| ew*0_mode .....           | 301 |
| ew*0_protocols .....      | 301 |
| ffauto .....              | 301 |
| ffnext .....              | 302 |
| interleave .....          | 302 |
| isp*_host_id .....        | 302 |
| isp*_soft_term .....      | 302 |
| kzpsa*_fast .....         | 302 |
| kzpsa*_host_id .....      | 302 |
| kzpsa*_termpwr .....      | 302 |
| memory_test .....         | 302 |
| ocp_text .....            | 302 |
| os_type .....             | 303 |
| pal .....                 | 303 |
| pci_parity .....          | 303 |
| pk*0_disconnect .....     | 303 |
| pk*0_fast .....           | 303 |
| pk*0_host_id .....        | 303 |
| pk*0_soft_term .....      | 303 |
| pk*0_termpwr .....        | 303 |
| simm_callout .....        | 304 |
| sys_model_num .....       | 304 |
| sys_serial_num .....      | 304 |
| sys_type .....            | 304 |
| tta0_baud .....           | 304 |

|                                                                                       |                            |
|---------------------------------------------------------------------------------------|----------------------------|
| version.....                                                                          | 304                        |
| FFAUTO and FFNEXT .....                                                               | 313                        |
| Galaxy Definitions .....                                                              | 305                        |
| lp_count.....                                                                         | 305                        |
| lp_io_mask .....                                                                      | 305                        |
| lp_mem_size .....                                                                     | 305                        |
| lp_shared_mem_size .....                                                              | 305                        |
| How to Set Customer Defined Variables .....                                           | 307                        |
| How to Set Customer Defined Variables on a Turbolaser .....                           | 309                        |
| mopv3_boot .....                                                                      | 395                        |
| Errors                                                                                |                            |
| AlphaServer 1000/1000A Led Code CB.....                                               | 405                        |
| AlphaServer 2100 5/375 "Cpu Type Not Supported.....                                   | 455                        |
| AlphaServer 2x00/2100A, FAIL I/O 00 04 .....                                          | 459                        |
| AlphaServer 2x00/2100A, FAIL I/O 04 .....                                             | 459                        |
| AlphaServer 2x00/2100A, FAIL I/O_00 0004 .....                                        | 459                        |
| AlphaServer DS10 6/600 MHZ CPU - No Default Bootfile Selected .....                   | 485                        |
| AlphaServer DS10/DS20 - Invalid Image.....                                            | 487                        |
| bad value - mopv3_boot not modified .....                                             | 395                        |
| console is secure - parameters are not allowed .....                                  | 385                        |
| DAC960 initialize issues with V5.7-4 console on AlphaServer 4x00 systems.....         | 473                        |
| DEC 3000-400, SYSTEM MACHINE CHECK ABORT HAS OCCURRED PC=000680.....                  | 507                        |
| illegal date/time entered .....                                                       | 469                        |
| Missing file .....                                                                    | 381                        |
| RCU - Failed to open, or encountered an error while reading the following files ..... | 335                        |
| Unable to Set Date/Time Under ARC.....                                                | 469                        |
| <b>F</b>                                                                              |                            |
| FailSafe Booter                                                                       |                            |
| Compaq AlphaServer DS10.....                                                          | 445                        |
| Compaq AlphaServer DS20.....                                                          | 441, 443                   |
| FailSafe Loader.....                                                                  | <i>See FailSafe Booter</i> |
| FailSafe Loader                                                                       |                            |
| AlphaServer 2x00, FSL Issues and Problems .....                                       | 467                        |
| AlphaServer 2x00, Overview and Functions .....                                        | 459                        |
| AlphaServer 2x00, Updating Firmware from .....                                        | 465                        |
| AlphaServer 4000/4100/1200 .....                                                      | 419                        |
| AlphaServer 800/Digital Server 3000 Model 3300/3305.....                              | 415                        |
| AlphaStation/AlphaServer .....                                                        | 411                        |
| Compaq AlphaServer ES40 .....                                                         | 431                        |
| Compaq AlphaServer ES45 .....                                                         | 439                        |
| Digital Personal WorkStation .....                                                    | 447                        |
| Digital Server 5000 Model5300.....                                                    | 425                        |
| Digital Server 7000 Model 7300.....                                                   | 425                        |
| FailSafe Loader Differences .....                                                     | 409                        |
| Firmware                                                                              |                            |
| Minimum Acceptable Firmware Versions for Recent OS Versions .....                     | 3                          |
| Firmware Update Procedures                                                            |                            |
| AlphaServer 1000/1000A .....                                                          | 47                         |
| AlphaServer 1200 .....                                                                | 61                         |
| AlphaServer 2000/2100/2100A .....                                                     | 73                         |
| AlphaServer 300 .....                                                                 | 25                         |
| AlphaServer 400 / AlphaStation 400 .....                                              | 211                        |
| AlphaServer 4000/4100 .....                                                           | 87                         |
| AlphaServer 800 .....                                                                 | 35                         |
| AlphaServer 8200/8400 .....                                                           | 101                        |
| AlphaStation 200/250 Full Flash .....                                                 | 187                        |
| AlphaStation 200/255 Half Flash.....                                                  | 199                        |



|                                                                                                  |                            |
|--------------------------------------------------------------------------------------------------|----------------------------|
| AlphaStation 500/600 .....                                                                       | 223                        |
| AlphaStation 600A.....                                                                           | 233                        |
| CIXCD .....                                                                                      | 347                        |
| Compaq AlphaServer DS10 and Professional WorkStation XP900 .....                                 | 145                        |
| Compaq AlphaServer DS20/DS20E .....                                                              | 155                        |
| Compaq AlphaServer ES40 - RMC .....                                                              | 495                        |
| Compaq AlphaServer ES40/TS40 .....                                                               | 165                        |
| Compaq AlphaServer ES45 .....                                                                    | 177                        |
| Compaq AlphaServer GS60/GS140.....                                                               | 115                        |
| Compaq AlphaServer GS80/GS160/GS320.....                                                         | 129                        |
| Compaq Professional WorkStation XP1000.....                                                      | 251                        |
| DEC 2000 Models 300/500.....                                                                     | 257                        |
| DEC 3000 .....                                                                                   | 263                        |
| DEC 4000 Models 600 and 700 .....                                                                | 277                        |
| DEC 7000/10000 .....                                                                             | 281                        |
| DECpc AXP150.....                                                                                | 257                        |
| Digital Personal WorkStation a/au Series .....                                                   | 243                        |
| Digital Server 3000 Models 3300/3305 .....                                                       | 35                         |
| Digital Server 5000 Models 5300/5305 .....                                                       | 61                         |
| Digital Server 7000 Models 7300/7305 .....                                                       | 87                         |
| Digital Ultimate WorkStation.....                                                                | 61                         |
| KGPSA - GS60/GS60E/GS140 or Turbolasers .....                                                    | 359                        |
| KGPSA - GS80/GS160/GS320.....                                                                    | 353                        |
| KGPSA using AlphaBIOS.....                                                                       | 363                        |
| VAX 7000/10000.....                                                                              | 287                        |
| Firmware Versions                                                                                |                            |
| AlphaServer 1000 EV5 thru AlphaServer 1200 Systems .....                                         | 5                          |
| AlphaServer 2100A EV5 thru AlphaServer 8x00 Systems.....                                         | 7                          |
| AlphaServer 2x00 EV4 thru AlphaServer 2100A EV4 Systems .....                                    | 6                          |
| AlphaServer 300 thru AlphaServer 1000 EV4.....                                                   | 4                          |
| AlphaStation 200 thru AlphaStation 255 .....                                                     | 13                         |
| AlphaStation 400 thru AlphaStation 600A .....                                                    | 14                         |
| Compaq AlphaServer DS10 thru Compaq AlphaServer GS60/GS60E/GS140 .....                           | 9                          |
| DEC 2000 Systems .....                                                                           | 15                         |
| DEC 3000 Systems .....                                                                           | 16                         |
| DEC 4000 Systems .....                                                                           | 21                         |
| DEC 7000/10000 Systems .....                                                                     | 19                         |
| Digital Personal WorkStation a/au Series .....                                                   | 12                         |
| Digital Ultimate WorkStation 533a2/533au2 Series and Compaq Professional WorkStation XP1000..... | 12                         |
| VAX 7000/10000 Systems.....                                                                      | 19                         |
| FSL .....                                                                                        | <i>See FailSafe Loader</i> |

## G

### Galaxy

|                               |                               |
|-------------------------------|-------------------------------|
| Environmental Variables ..... | <i>See Galaxy Definitions</i> |
| Firmware updates on.....      | 475                           |

## H

|               |     |
|---------------|-----|
| HALcode ..... | 295 |
|---------------|-----|

## I

|              |     |
|--------------|-----|
| Issues ..... | 293 |
|--------------|-----|

## J

### Jumpers

|                                       |    |
|---------------------------------------|----|
| AlphaServer 1000/1000 , CPU EV4 ..... | 56 |
|---------------------------------------|----|

|                                                       |               |
|-------------------------------------------------------|---------------|
| AlphaServer 1000/1000A, CPU EV5/300 .....             | 57            |
| AlphaServer 1000/1000A, Motherboard.....              | 55            |
| AlphaServer 1000A, CPU EV5/333 .....                  | 58            |
| AlphaServer 1000A, CPU EV5/400 .....                  | 59            |
| AlphaServer 2000, BA720 Enclosure .....               | 83            |
| AlphaServer 2100 .....                                | 85            |
| AlphaServer 2100 LP.....                              | 86            |
| AlphaServer 2100/2100RM, BA740/BA741 Enclosures.....  | 84            |
| AlphaServer 2100A RM .....                            | 85            |
| AlphaServer 300, Motherboard.....                     | 33            |
| AlphaServer 400, CPU.....                             | 220           |
| AlphaServer 400, Motherboard.....                     | 219           |
| AlphaServer 4000/4100 LP, PCI/EISA Motherboard.....   | 99            |
| AlphaServer 4000/4100, PCI/EISA Motherboard .....     | 99            |
| AlphaServer 800, Motherboard.....                     | 45            |
| AlphaServer DS20 , Motherboard.....                   | 163           |
| AlphaServers and AlphaStations .....                  | 1, 2          |
| AlphaStation 200, Motherboard.....                    | 195–96, 207–8 |
| AlphaStation 250. Motherboard.....                    | 197           |
| AlphaStation 255, Motherboard.....                    | 209–10        |
| AlphaStation 400, CPU.....                            | 222           |
| AlphaStation 400, Motherboard.....                    | 221           |
| AlphaStation 500, System Module .....                 | 229–30        |
| AlphaStation 600, System Module .....                 | 231–32        |
| AlphaStation 600A, CPU.....                           | 242           |
| AlphaStation 600A, System Board .....                 | 241           |
| Compaq AlphaServer DS10, MotherBoard .....            | 153           |
| Compaq AlphaServer ES40, CSB - System Backplane ..... | 175           |
| Compaq AlphaServer ES45, CSB - System Backplane ..... | 185           |
| DEC 3000 Model 300, Rom Update .....                  | 271           |
| DEC 3000 Model 400/600/700, ROM Update.....           | 271           |
| DEC 3000 Models 500/500S/500X, I/O Module.....        | 273           |
| DEC 3000 Models 500/500S/500X, System Module .....    | 272           |
| DEC 3000 Models 800/800, I/O Module.....              | 275           |
| DEC 3000 Models 800/900, System Module.....           | 274           |
| VAX and DEC machines .....                            | 2             |

## P

|                                                                |               |
|----------------------------------------------------------------|---------------|
| PALcode .....                                                  | 295           |
| Password                                                       |               |
| Clearing SRM Console Password on an AlphaStation 500/600 ..... | 387, 389, 391 |
| Clearing SRM Password on a Miata/Miata GL .....                | 393           |
| Powerup Sequence.....                                          | 297           |

## R

|                                          |     |
|------------------------------------------|-----|
| RCU                                      |     |
| Booting off CD .....                     | 331 |
| Creating RCU floppy .....                | 333 |
| Running RCU on a TurboLaser .....        | 337 |
| References .....                         | 523 |
| Alpha System Webpages .....              | 525 |
| Documentation.....                       | 528 |
| Firmware Locations on the Internet ..... | 525 |
| Firmware Locations Online .....          | 527 |
| Firmware Pages on ProSIC .....           | 526 |
| Notesfile Locations .....                | 525 |

## S

|                     |                    |
|---------------------|--------------------|
| Scripts .....       | 317                |
| 1000A_to_600A.....  | 317                |
| 600A_to_1000A.....  | 317                |
| cpu_downgrade.....  | 317                |
| cpu_upgrade.....    | 317                |
| make_dual_srm.....  | 317                |
| read_rel_notes..... | 318                |
| restore_nvram ..... | 318                |
| save_nvram .....    | 317–18             |
| update_fsl.....     | 317                |
| Switches.....       | <i>See</i> Jumpers |

## U

|                                     |                    |
|-------------------------------------|--------------------|
| Utilities                           |                    |
| clr_pwd, AlphaStation 500/600 ..... | 387                |
| cnfgdiag.exe, KZPSA .....           | 71, 96             |
| ECU .....                           | <i>See</i> ECU     |
| eeromcfg.exe, ISP1020,KZPBA .....   | 111, 125           |
| KZPSA_EDIT, KZPSA .....             | 112, 126, 375      |
| lp6dutil.exe, KGPSA .....           | 367                |
| lp6ldr.exe, KGPSA .....             | 112, 126, 353, 359 |
| miata_clear_password.....           | 393                |
| RCU .....                           | <i>See</i> RCU     |
| UTIL_CLI, KZPSA .....               | 111, 125, 369      |

## W

|                  |     |
|------------------|-----|
| wwidmgr          |     |
| Description..... | 377 |
| Using.....       | 377 |

